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**A DESCRIPTIVE STUDY OF US ARMY SOLDIERS REFERRED TO,
EVALUATED BY AND ENROLLED IN THE ARMY SUBSTANCE ABUSE
PROGRAM, 1988-2003**

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List of Acronyms

ADAPCP	Alcohol and Drug Abuse Prevention and Control Program
ADAPT	Alcohol and other Drug Abuse Prevention Training
ASAP	Army Substance Abuse Program (formerly ADAPCP)
CCC	Community Counseling Center
DAMIS	Drug and Alcohol Management Information System
DMDC	Defense Manpower Data Center
DUI	Driving while Under the Influence
MLDA	Minimum Legal Drinking Age
OR	Odds Ratio
TAIHOD	Total Army Injury and Health Outcomes Database

Executive Summary

Alcohol abuse is a major concern in the US military since the use of alcohol is associated with a myriad of adverse outcomes that can affect both individual and collective health and performance of soldiers. The US Army Substance Abuse Program (ASAP) provides evaluation and treatment services for drug and alcohol abusers within the Armed Forces. ASAP is designed to identify and treat soldiers with potential to recover, and therefore the ability to further contribute to the military. Little has been published describing the characteristics of soldiers referred for alcohol evaluation and enrolled in ASAP for treatment of an alcohol abuse problem.

This report describes the demographic and occupational characteristics of soldiers referred to ASAP for an alcohol abuse evaluation by linking ASAP data to Army personnel data. Details regarding ASAP referral mechanism (i.e. medical referrals, referral following a legal investigation, self referrals) are explored. In some cases soldiers referred to ASAP are not enrolled for treatment; these special cases are investigated.

We found that several soldiers who were single, young, male, of lower rank, of lower education, in the infantry and not black are overrepresented among alcohol referrals. Commanders and physicians should therefore be aware of these characteristics when identifying soldiers who abuse alcohol, but also keep in mind that alcohol abuse crosses all demographic boundaries. Additionally, different referral processes seem to reach different demographic subgroups of the population. Males were much more likely than females to be referred for evaluation as a result of an investigation, and were also more likely to be referred as a result of drinking under the influence. Female soldiers were more likely to self-refer, to have a medical referral or be referred by family. Hispanics and no-longer-married soldiers were both more likely than others to be referred to ASAP for evaluation following a DUI charge. This information should be applied to increase both the sensitivity and specificity of screening techniques.

Given the fact that ASAP is designed specifically to enroll soldiers who may be rehabilitated and returned to duty, there are some areas where the program could improve. High re-enrollment rates among the self-referred can be used to reassess the ASAP counselor or Commander's approach to treating self-referring soldiers. Treating these individuals sooner may expedite rehabilitation and a more productive return to duty. The eventual enrollments among soldiers originally referred for prevention training suggest that the current ADAPT curriculum should either be revised or implemented more aggressively or the screening process reviewed to determine whether a more rigorous standard should be applied in determining whether an individual should be enrolled in a more formal treatment program. Despite these areas for potential improvement, overall, the ASAP program has and continues to make great contributions to the health and readiness of the Army.

Background

Alcohol abuse is the third most common preventable cause of death in the U.S. according to the Centers for Disease Control (1). Its association with increased risk of injuries and a number of other physical and mental health conditions and social problems has been well-documented (19, 20, 30, 31, 33, 34, 44, 45).

In the U.S. military, alcohol abuse is of special concern for two main reasons. Firstly, it is more common among active duty Army soldiers than among their civilian peers (14, 26). Secondly, it poses a potential threat not only to the health of individual service members - it has been linked to a wide range of adverse outcomes including drowning (9), motor vehicle injury (10), falls (43), early discharge from the Army (32) and perpetration of spouse abuse (11, 17) - but also to the readiness of the military overall (14, 50, 51).

The military recognizes that alcohol abuse can have a negative impact on the health and readiness of the armed forces and that such abuse is preventable. Therefore, all military personnel are required to attend four hours of basic alcohol and drug prevention education services each year (2). This training focuses on informing soldiers about the negative consequences of alcohol abuse and offering information on local substance abuse programs. In addition to this service-wide educational intervention, soldiers may be either referred to, or may voluntarily join, the more formal alcohol and other drug abuse prevention training (ADAPT) program. Soldiers in the ADAPT education program receive no fewer than 12 hours of prevention training, the main focus of which is on educating soldiers about the consequences of substance abuse (2).

Despite these prevention and educational campaigns to deter abusive alcohol use, some soldiers still engage in unhealthy drinking behaviors or develop alcohol-related problems. In response, the Army established the Army Substance Abuse Program (ASAP), formerly the U.S Army Alcohol and Drug Abuse Prevention and Control Program (ADAPCP). This program, developed in 1971, screens referred soldiers for drug and/or alcohol abuse and provides or manages alcohol treatment when appropriate. It operates in Army bases around the globe at the local installation level with screening and treatment information sent to a central repository agency in Alexandria, Virginia for record keeping.

There are a number of ways in which an individual with a substance abuse problem might be identified, referred for evaluation and ultimately treated for this condition. Some of these avenues are similar to those that have been studied and described in the civilian population including medical referrals through a primary care health provider (8, 22) or hospital and emergency room personnel (21, 41, 46), legal intervention, and self- and family-referral (7, 12, 48, 49). In addition to these routes, there are additional mechanisms for referral in the Army. Commanders and supervisors may request targeted screening of individuals and sometimes entire Army units. Impetus for screening may include suspicious behavior or misconduct. Soldiers may also be

referred for an alcohol abuse evaluation as part of routine security clearances or following a citation, on- or off-post, for driving under the influence of alcohol (DUI).

In civilian populations, referral procedures have been shown to relate to characteristics of the individuals being referred for evaluation and/or treatment. Yu *et al.* (2004) found that alcoholic Hispanic men were more likely than alcoholic white and black men to be referred for treatment through a medical care process (52). Boscarino (1980) found that, among patients in alcoholic treatment centers, those referred through legal or criminal intervention were younger and more likely to be male, while those who self-referred were older and more likely to be black, and those referred by family members were older and more likely to be female and black (12). These findings, however, were based on aggregate demographic data from alcohol treatment centers rather than on individual characteristics according to source of referral. Demographic characteristics of Army soldiers referred to alcohol evaluation and treatment have not been well studied. The experience in civilian populations, the nature of military incentive structures and the existence of additional referral mechanisms in the Army suggest that there may be important variations that should be documented in order to better serve subpopulations of soldiers at risk and to identify possible gaps in the system.

There are also reasons to believe that different referral routes will affect the likelihood of enrollment in Army treatment programs, as well as the likelihood of success once enrolled. Weisner *et al.* (2002) showed that among samples of insured and uninsured civilians with alcohol problems, criminal justice referrals were significantly and positively related to entering an alcohol treatment program. Among the insured population only, both workplace and family pressure had a significant impact on the decision to enter a treatment program (49). Atkinson *et al.* (2003) found that, for males over 55 years of age, legal intervention was a stronger impetus for completing alcohol treatment than self-referral, family referrals or referral by health or social services (7).

While there are a few studies that explore the efficacy of the Army alcohol and drug treatment program (29, 36, 42, 47), there are no comprehensive studies that have examined in detail the process of referral and enrollment nor the characteristics of the individuals referred to and treated in the Army Substance Abuse Program. Such information should be gathered and used to improve the design of intervention strategies to combat the important problem of alcohol abuse in the U.S. military.

The objective of this study is to address the gap in information about referral and enrollment in the Army's alcohol abuse treatment program. It offers a comprehensive look at the demographic characteristics of soldiers evaluated for alcohol abuse, the source of their referral and the probability and outcome of enrollment in the Army's substance abuse program.

The Army Substance Abuse Program

In the current ASAP system, once a soldier is referred for an alcohol evaluation a Rehabilitation Team is assigned to determine whether enrollment in the alcohol treatment program is warranted. This team consists of ASAP professionals, medical doctors and the soldier's Commander. Only soldiers determined to have a good chance of successfully completing treatment, recovering and returning to duty are considered eligible for enrollment. According to Army Regulations 600-85, "the unit commander should recommend enrollment based on the soldier's potential for continued military service in terms of professional skills, behavior, and potential for advancement" (2). The Commander plays an important role in determining whether a soldier will be enrolled for treatment. In addition, the Commander's opinion is also considered by the ASAP counselor in determining whether a soldier is retained in a treatment program. Thus, referral and program success are partially mediated by occupational performance.

Soldiers are enrolled in ASAP treatment when the counselor/evaluator determines the individual has a pattern of substance abuse that requires more than a limited prevention-related educational intervention. Treatment generally occurs in an outpatient facility in either individual or group therapy settings depending upon availability of services at a given military installation. If there is no substance abuse facility on base a soldier is sent to the closest Army facility on a different base. Outpatient treatment is conducted at Army ASAP Community Counseling Centers (CCCs), though soldiers may also attend civilian programs such as Alcoholics Anonymous. Treatment is designed to be short-term. However, the actual length of treatment ranges from a minimum of 90 days to a maximum of 365 days. Treatment length varies depending on the needs of the individual soldier and based on recommendation by the ASAP counselor and the soldier's Commander. The Army's ADAPT educational program may also be included as part of a soldier's treatment. ADAPT does not have a set curricula and varies by installation. ADAPT programs must be at least 12 hours and must be completed within 30 days. At any time during or after the ADAPT prevention training, a soldier may self-enroll or be referred for enrollment in a more formal alcohol treatment program. Before September 1988 this change in status may not have been recorded in the alcohol treatment data. However, since September 1988 a change in status from ADAPT training to alcohol treatment enrollment would be accompanied by a new ASAP evaluation record and the new enrollment status noted.

Once enrolled for alcohol treatment, a soldier is required to attend follow-up evaluation sessions (varying in number and frequency depending on the situation) with trained counselors in order to assess the efficacy of the treatment program. Soldiers who fail to complete an Army alcohol treatment program are rarely given a second chance. Army regulations indicate that only in extreme or very special circumstances would a soldier be re-enrolled in ASAP (2). More information is needed to better characterize the circumstances under which this might occur and the probability of successful rehabilitation when there is recidivism.

In some incidents of more severe alcohol abuse problems, an enrolled soldier may be admitted to an inpatient residential treatment facility (RTF) for more intensive treatment or detoxification. Such treatment must be authorized through the CCC and entails a six-week inpatient program at a RTF. Upon release, these soldiers would be expected to undergo 365 days of outpatient alcohol treatment (2).

In many cases, soldiers referred to the alcohol program for evaluation are not enrolled for treatment. If a soldier is not enrolled, the evaluator must provide a reason explaining the decision to not enroll. Reasons for non-enrollment may include: referral to the ADAPT education and training program in lieu of more formal treatment (for example, if the counselor determines that the alcohol-related incident resulting in referral for evaluation is not indicative of a serious substance abuse problem, but rather a result of poor judgment or recreational use.); Commander decision to not enroll the soldier; soldier refuses treatment; and a counselor's determination that the soldier does not, in fact, have a substance abuse problem.

The Army alcohol treatment program has evolved somewhat from its inception in 1971. Prior to 1988, ASAP (then ADAPCP) consisted of a system in which a soldier could be enrolled in one of three tracks. Track 1, called "prevention training" prior to 1988, was identical to the current ADAPT program. If, during Track 1 prevention training, a counselor determined that the soldier needed additional intervention or treatment, he or she would be switched into Track 2 without any additional formal evaluation or enrollment processing. Track 2 mirrors the standard outpatient enrollment component of the current program. Soldiers whose condition necessitated inpatient treatment were enrolled in Track 3 from the start, similar to the current inpatient treatment program. Following the 6-week treatment at an RTF, a soldier would then continue with Track 2 outpatient treatment. While the program has in effect not changed much over the past 30 years, record keeping and documentation of cases has. It is therefore difficult to track changes in characteristics of soldiers referred to and enrolled in alcohol abuse programs between these two time periods. In addition, detailed information about the reasons for non-enrollment and the referral sources are only available after the transition away from the Track system beginning September 1988.

In 1994 Army Regulation 600-85 was amended by a directive to give the ASAP counselor ultimate authority to decide whether a soldier is fit to return to duty, a responsibility formerly granted to Commanders. Despite this shift in formal regulations, however, Commanders still play a large role in a soldier's treatment and often work with ASAP counselor's to assess a soldier's treatment performance and his or her ability to return to duty (2).

Methods

I. The Data

Data for this study came from the Total Army Injury and Health Outcomes Database (4, 5) which uses encrypted individual identifiers to link records from a variety of U.S. Department of Defense administrative and health data sources. These include the Defense Manpower Data Center (DMDC) which contains personnel records such as age, rank, education level and marital status, and the Drug and Alcohol Management Information System (DAMIS) database which stores records from the Army Substance Abuse Program.

DAMIS provides data on the occurrence of drug and alcohol problems identified through referrals for alcohol and drug treatment, and on follow-up/progress information for enrollees. Standard report forms, DA4465 (evaluation) and DA4466 (progress reports) document the source of referrals (i.e. self, physician or Commander-directed referrals), the reason for evaluation (alcohol, or a specific drug) enrollment decisions and progress of soldier in treatment program. When a soldier is not enrolled a reason for non-enrollment is supplied. When a soldier is released from the program, the reason for the release (e.g., completion of the program – return to duty, failure to comply with treatment – discharge from service, etc) is supplied. A soldier may have multiple alcohol- or drug-related referrals and/or enrollments throughout his or her military career, each occurrence with related evaluation, enrollment decision and - where appropriate - follow-up and release data. Information about reasons for non-enrollment and source of referral is only available after September 1988 with the transition away from the track system. DAMIS data available in the TAIHOD extend through October 2003.

For this study, information related to a soldier's alcohol-related referral and corresponding evaluations, enrollments and follow-up are used. All demographic information was extracted from the DMDC six-month personnel file closest in time to the date of the initial alcohol referral for evaluation.

II. Study Population

The study population comprised 188,139 soldiers whose initial evaluation (first time in the system) for alcohol abuse occurred between September 1988 and October 2003. Where more than one alcohol-related referral and evaluation was conducted during the study period, only the first was included. A sub-study of factors associated with repeat enrollments uses soldiers whose first-time alcohol evaluation took place between January 1, 1988 and December 31, 2000. The choice of December 2000 as the end date for inclusion in the sub-study was made in order to allow sufficient time to explore the risk for subsequent (repeat) ASAP encounters. Preliminary analyses for all evaluations from 1988 through 2000 suggested that the average length of time from first evaluation for an alcohol problem to a second ASAP evaluation for any problem was 673 days, or 1.84 years and that by 900 days (2.5 years), 75% of soldiers had been evaluated a second

time. Soldiers were followed through October 2003 to assess risk for subsequent repeat ASAP alcohol-related referral, allowing for at least 2.8 years of follow-up time.

III. Analyses

The demographic and occupational characteristics of soldiers referred for evaluation were compared to the total U.S. Army population. Descriptive analyses included frequency distributions overall and by demographic subgroups in the Army. Analysis of associations between occupation and referral mechanism and treatment are stratified by enlisted and officer status because many enlisted occupational specialties are not open to officers and, similarly, many officer occupational specialties are not open to enlisted personnel.

To explore any temporal effects on alcohol referrals or enrollment, we analyzed alcohol referral and evaluation rates over time. Chi-square analysis was used to identify significant differences in population characteristics. When comparisons were made, odds ratios (ORs) and accompanying 95% confidence intervals (CIs) are reported. When applicable, Chi-square tests for linear trends were conducted.

A sub-analysis of soldiers evaluated for an alcohol problem but not enrolled for treatment was conducted. We analyzed the reason for non-enrollment by demographic characteristics and initial referral mechanism, and explored the circumstances under which a Commander or supervisor might decide against enrollment. Finally, we examined the factors associated with risk for a repeat alcohol-related enrollment, including the source of initial referral and treatment decision made during the first alcohol-related evaluation.

Analyses for this research were performed with SAS, Version 8 (3) and Epi Info (TM), Version 3.3.2 (18). All analyses for this project adhere to the policies for the protection of human subjects as prescribed in Army Regulation 70-25, and with the provisions of 45 CFR 46.

Results

There were 188,139 soldiers with one or more alcohol-related referral during the study period.

I. How do soldiers referred to ASAP for an alcohol evaluation differ from the Army population at large?

Table 1 displays the demographic characteristics of soldiers in the study population at the time of their initial evaluation and the average demographic characteristics of the entire U.S. Army population over the study period. These unadjusted data suggest that soldiers who are male, younger, lower-ranked, never

married, less well-educated, and have the occupation of infantry/gun crew or a tactical operations officers are overrepresented among alcohol-related referrals to ASAP.

It should be noted that missing demographic data, though rare, do not appear to be randomly distributed - soldiers with missing data (particularly officers missing rank information) are at increased risk for ASAP alcohol referrals. It may be that soldiers with serious alcohol-related problems or alcohol-related events are in the Army for a relatively short period of time or are dismissed abruptly and that less data is recorded in their files as a result.

Table 1. Demographic characteristics of the ASAP study population (1988-2003) and comparison to the average general Army population.

Demographics	ASAP Study Population (N=188,139) Column %	Average General Army Population, 1988-2003 (N=615,327) Column %
<i>Gender</i>		
Male	93.9	86.7
Female	6.1	13.2
Unknown	0.0	0.1
<i>Age</i>		
<21	25.9	14.5
21-25	45.8	32.1
26-30	15.4	20.7
31-35	7.5	14.9
36-40	3.8	10.7
>40	1.5	7.0
Unknown	0.1	0.2
<i>Race/Ethnicity^a</i>		
White	65.6	62.0
African-American	23.9	27.1
Hispanic	5.5	5.4
Indian/Alaskan	1.3	0.6
Asian/Pacific	1.4	2.1
Other	2.2	2.5
Unknown	0.1	0.1
<i>Marital Status</i>		
Single	60.8	39.4
Married	35.0	54.3
Widowed/Divorced/ Legally Separated	3.0	4.1
Unknown	1.2	2.3
<i>Education</i>		
< High School	2.6	1.4
High School Grad/ GED/Alt. Education	91.3	75.9

Demographics	ASAP Study Population (N=188,139) Column %	Average General Army Population, 1988-2003 (N=615,327) Column %
Some College	2.0	5.0
≥College degree	2.9	15.7
Unknown	1.3	2.1
<i>Rank</i>		
<u>Enlisted Personnel</u>	N=184,031 ^b	N=523,080
E1-E4	79.5	56.9
E5-E6	16.9	31.7
E7-E9	3.6	11.9
Enlisted Unknown	0.0	0.0
<u>Officers</u>	N=4,108 ^b	N=77,682
Warrant Officer	21.5	14.5
O1 – O3	61.2	0.3
O4 – O5	14.6	52.2
O6 – O11	2.5	28.0
Officer Unknown	0.3	5.0
<i>Occupation category</i>		
<u>Enlisted personnel</u>	N=184,031 ^b	N=523,080
Infantry/Gun crew	32.0	25.3
Electronic Equipment repair	5.5	5.7
Communications/ Intelligence	11.6	12.1
Health Care	6.4	7.8
Technical/Allied special	2.5	3.1
Support/ Administrative	10.9	16.2
Electrical/ Mechanical equipment repair	16.5	14.9
Crafts workers	2.6	2.1
Service/Supply	11.5	11.9
Non-occupational/ Other ^c	0.4	0.6
Enlisted Unknown	0.1	0.2
<u>Officers</u>	N=4,108 ^b	N=77,682
General Officer/ Executive	0.2	0.0
Tactical operations	40.4	32.9
Intelligence Officer	4.7	5.4
Engineering & Maintenance Officer	13.2	11.0
Scientists & Professionals	2.4	5.8
Health Care Officer	12.9	16.3
Administrator	5.7	6.5
Supply, Procurement, Allied Officer	7.9	8.3
Non-occupational/ Other ^d	12.1	12.9
Officer Unknown	0.5	0.4

^a Data on race/ethnicity are missing from the 2003 DMDC personnel files (N=1,044). Percents for the ASAP population were calculated out of 186,195 soldiers and average percentages for the general Army population were calculated over 15 years.

^b Five soldiers were of unknown rank and were not classifiable as either an officer or as enlisted personnel.

^c Enlisted personnel listed as “non-occupational/other” include students, patients, prisoners, officers in training and enlisted soldiers in bootcamp.

^d Officers listed as “non-occupational/other” include patients, prisoners, advanced students and other non-classifiable officer occupational categories.

We examined interactions between marital status and race, and marital status and gender for alcohol-related referrals. The majority of the soldiers referred for an evaluation were single (60.8%). However, there were race-related differences in this association such that black soldiers referred for an evaluation were nearly twice as likely to be married than be single as soldiers of other ethnicities (OR = 1.82, 95% CI = 1.78 – 1.86). These differences could not be explained by overall differences in race and marital status in the Army population at large. In the general Army population, black soldiers were slightly more likely than soldiers of other races to be married (OR = 1.07, 95% CI = 1.06-1.07). Women referred to ASAP were significantly more likely to be no longer married (divorced, widowed or separated) than men who were referred to ASAP (OR = 2.82, 95% CI = 2.61 – 3.04).

II. Who was referred to ASAP for evaluation of a potential alcohol problem and what was the referral mechanism?

Three sources account for over 70% of all referrals - Commander or supervisor recommendation (29.7%), legal investigation or apprehension (22.9%) and self-referral (18.8%) (Table 2).

Table 2. Sources of referral to ASAP for active-duty Army soldiers with first-time alcohol evaluations, 1988-2003.

		Number of soldiers (N=188,139) Column %
Source of Referral	Commander/Supervisor	29.7
	Investigation/Apprehension	22.9
	Self	18.8
	Medical/Physician-directed	12.6
	Driving while Under Influence ^a	11.6
	Commander-directed Biochemical	3.5
	Other Source ^b	0.5
	Security Clearance	0.3
	Family Member	0.1

^a Referrals for Driving while Under Influence exist only after 1991.

^b Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

Among referred soldiers, all demographic variables (gender, age, ethnicity, marital status, education, rank, occupation) were significantly associated with referral source in unadjusted models ($p < 0.05$). There were some important and noteworthy differences in reason for referral among male and female soldiers. The most striking difference between the genders was the relative importance of investigation and apprehension as a source of referral for male soldiers. Male soldiers were more likely than female soldiers to have been referred for evaluation as a result of an investigation (OR = 2.12, 95% CI = 2.01 – 2.25). They were also more likely to be referred as a result of apprehension for driving while under the influence of alcohol. By contrast women were more likely than men to self-refer, to be referred by a medical care provider, or by a family member – OR for family referral for women versus men was 2.1 (95% CI = 1.36 – 3.21).

Table 3. Gender and source of referral to ASAP among active-duty Army soldiers, 1988 – 2003.

Source of referral	Gender ^a	
	Male (N=176,630) Column %	Female (N=11,426) Column %
Commander/Supervisor	29.5	32.7
Investigation/ Apprehension	23.5	12.7
Self Referral	18.6	22.5
Medical/Physician-directed	12.1	20.6
Driving while Under Influence	11.9	7.1
Commander-directed Biochemical	3.5	3.2
Other Source ^b	0.4	0.9
Security Clearance	0.3	0.3
Family Member	0.1	0.2

^a There are 83 soldiers of unknown gender.

^b Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, and Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

Patterns of referral also vary with age. Increasing age is positively associated with a greater likelihood of self-referral (Chi Square for linear trend = 297, $p < .005$) and referral by family member or by medical staff. On the other hand, increasing age is negatively associated with Commander or supervisor referral (Chi-Square for linear trend = 2,337, $p < .005$). Odds of command referral versus other mechanism of referral among soldiers under 21 were nearly twice that of soldiers over 40 (OR = 2.42). Soldiers under the age of 21 were less likely than older soldiers to be referred for evaluation as the result of a drinking and driving related incident. Only 7.4% of soldiers under the age of 21 were identified through a DUI compared to 11.6% or more of all other age groups (OR = 0.53, 95% CI = 0.51 – 0.55).

Table 4. Age and source of referral to ASAP for active-duty Army soldiers, 1988-2003.

Source of Referral	Age ^a					
	Less than 21 (N=48,778) Column %	21- 25 (N=113,988) Column %	26-30 (N=42,195) Column %	31-35 (N=21,402) Column %	36-40 (N=11,214) Column %	> 40 (N=4,112) Column %
Commander/ Supervisor	38.2	29.0	24.0	22.8	20.9	20.3
Investigation/ Apprehension	21.7	22.8	25.0	24.5	21.9	19.1
Self	17.2	18.5	19.8	21.1	22.8	25.0
Medical/ Physician-directed	10.9	12.5	13.4	14.3	16.7	19.4
Driving while Under Influence	7.4	12.8	13.8	13.5	13.6	11.5
Commander-directed Biochemical	4.1	3.7	2.9	2.5	2.1	1.2
Other Source ^b	0.3	0.4	0.7	0.8	0.9	1.7
Security Clearance	0.3	0.3	0.3	0.2	0.4	0.4
Family Member	0.0	0.0	0.1	0.4	0.1	1.5

^a 222 soldiers were of unknown age.

^b Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, and Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

Race/ethnicity was associated with type of referral mechanism (Table 5). Whites were most likely to self refer while blacks were least likely. Black soldiers were significantly more likely to be referred for evaluation as the result of a legal investigation (OR = 1.47, 95% CI = 1.43 – 1.51). Non-white Hispanics were more likely than other ethnic groups to be referred for evaluation following DUI investigation (OR = 1.52, 95% CI = 1.44 – 1.61). Soldiers of Native American ancestry were significantly more likely to be referred by Commanders than were soldiers of other racial/ethnic backgrounds (OR = 1.29, 95% CI = 1.18 – 1.40).

Table 5. Race/ethnicity and source of referral to ASAP among active-duty Army soldiers, 1988-2003.

Source of Referral	Race/ethnicity ^a					
	White (N=122,123) Column %	Black (N=44,499) Column %	Hispanic (N=10,179) Column %	Indian/Alaskan (N=2,461) Column %	Asian/Pacific Islander (N=2,662) Column %	Other (N=4,165) Column %
Commander/ Supervisor	30.7	26.9	28.7	35.2	32.5	28.0
Investigation/ Apprehension	21.0	28.4	22.6	19.2	22.6	25.4
Self	21.0	13.6	16.3	21.7	15.1	16.5
Medical/Physician-directed	12.6	12.9	12.0	11.3	13.2	12.8
Driving while Under Influence	10.5	13.3	16.2	9.4	12.5	13.4
Commander-directed Biochemical	3.3	4.1	3.6	2.5	3.4	2.9
Other Source ^b	0.4	0.6	0.4	0.4	0.3	0.7
Security Clearance	0.3	0.1	0.3	0.3	0.2	0.1
Family Member	0.1	0.1	0.1	0.1	0.2	0.1

^a 2,050 soldiers were of unknown ethnicity.

^b Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, and Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

Single soldiers were significantly more likely to be referred for evaluation by a Commander or supervisor than were married or no-longer-married soldiers. Married and no-longer-married soldiers were more likely to self-refer. Those who were no longer married were significantly more likely than others to have been referred as the result of a DUI charge (OR = 1.33, 95% CI = 1.24 – 1.44) (Table 6).

Table 6. Marital Status and source of referral to ASAP among active-duty Army soldiers, 1988-2003.

Source of Referral	Marital Status ^a		
	Single (N=114,345) Column %	Married (N=65,803) Column %	No longer married (N=5,704) Column %
Commander/Supervisor	33.4	24.1	24.3
Investigation/ Apprehension	21.9	24.7	23.8
Self	17.9	20.3	20.6
Medical/Physician-directed	10.7	15.8	13.0
Driving while Under Influence	11.5	11.3	14.7
Commander-directed Biochemical	4.1	2.6	2.6
Other Source ^b	0.3	0.8	0.5
Security Clearance	0.3	0.2	0.3
Family Member	0.0	0.3	0.1

^a 2,287 soldiers were of unknown marital status.

^b Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, and Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

Of those soldiers that are referred, those with no more than a high school education were more likely to be referred by a Commander or supervisor than soldiers with higher levels of education (OR = 1.39, 95% CI = 1.32 – 1.46). They were also less likely than soldiers with more than a high school degree to be referred by a family member or as a result of driving under the influence. Soldiers with at least a college degree were significantly more likely than soldiers in any other educational category to have been referred as the result of driving under the influence (OR = 1.63, 95% CI = 1.52 – 1.75).

Table 7. Education and source of referral to ASAP among active-duty Army soldiers, 1988-2003.

Source of referral	Education ^a			
	Less than High School (N=4,861) Column %	High School/ GED (N=171,838) Column %	Some college (N=3,717) Column %	College and above (N=5,364) Column %
Commander/ Supervisor	35.8	29.8	23.7	23.5
Investigation/ Apprehension	20.4	23.1	21.0	21.4
Self	19.5	18.7	21.7	21.5

Medical/Physician-directed	10.7	12.6	14.9	12.8
Driving while Under Influence	7.8	11.5	13.9	17.4
Commander-directed biochemical	5.0	3.6	2.5	1.5
Other Source ^c	0.4	0.4	1.2	1.0
Security Clearance	0.4	0.3	0.6	0.7
Family Member	0.0	0.1	0.5	0.4

^a 2,359 soldiers had an unknown education level.

^b Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, and Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

There were slightly higher odds of Commander referrals for the lower-ranked enlisted soldiers (E1-E4) (OR = 1.66, 95% CI = 1.62 – 1.70). Higher-ranking enlisted soldiers (E7-E9) were 1.39 times more likely to self refer than lower-ranked enlisted soldiers.

Table 8. Rank and source of referral to ASAP among enlisted active-duty Army soldiers, 1988-2003.

Source of referral	Rank-Enlisted ^a		
	E1-E4 (N=146,361) Column %	E5-E6 (N=31,091) Column %	E7-E9 (N=6,560) Column %
Commander/Supervisor (N=54,973) 29.9%	31.9	22.5	19.8
Investigation/ Apprehension (N=42,066) 22.9%	21.9	27.1	23.5
Self (N=34,545) 18.8%	18.4	19.4	24.0
Medical/Physician-directed (N=23,153) 12.6%	12.1	14.0	15.9
Driving while Under Influence (N=21,181) 11.5%	10.9	14.2	12.7
Commander-directed Biochemical (N=6,562) 3.6%	4.0	1.9	1.5
Other Source ^b (N=818) 0.4%	0.4	0.7	1.1
Security Clearance (N=519) 0.3%	0.3	0.2	0.3
Family Member (N=195) 0.1%	0.0	0.2	1.1

^a 19 enlisted soldiers were of unknown rank.

^b Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, and Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

There were some variations in alcohol referral patterns across enlisted soldier occupational specialties (Table 9). For example, soldiers in healthcare occupations were somewhat more likely than other enlisted occupations to self refer or be referred medically. They were also significantly less likely than others to be referred for evaluation as a result of an investigation (OR = 0.73, 95% CI = 0.69 – 0.77) while electrical and mechanical repairmen were slightly yet significantly more likely (OR = 1.13, 95% CI = 1.09 – 1.16).

Table 9. Occupation and source of referral to ASAP among enlisted active-duty Army soldiers, 1988-2003.

Source of referral ^c	Occupation - Enlisted ^{a,b}								
	Infantry/ Gun Crew (N=58,795) Column %	Electronic Equip. Repair (N=10,127) Column %	Communi- cation & Intelligence (N=21,331) Column %	Health Care (N=11,774) Column %	Technical Allied Special (N=4,623) Column %	Support/ Admin. (N=20,121) Column %	Electrical/ Mechanical repairs (N=30,429) Column %	Craft- workers (N=4,829) Column %	Service/ Supply (N=21,216) Column %
Commander/ Supervisor (N=54,676) 29.8%	29.4	32.3	30.1	30.9	30.6	28.8	28.7	28.4	32.0
Investigation/ Apprehension (N=41,963) 22.9%	23.9	19.5	23.7	18.1	21.2	23.2	24.7	23.8	20.8
Self (N=34,428) 18.8%	18.3	18.3	19.2	20.1	20.9	17.9	18.8	20.5	19.4
Medical/ Physician- directed (N=23,055) 12.6%	12.2	11.3	12.2	15.4	11.8	13.6	12.3	11.6	12.8
Driving Under Influence (N=21,067) 11.5%	11.4	12.5	10.5	11.8	11.6	12.3	11.8	11.8	10.8
Commander- directed Biochemical (N=6,526) 3.6%	4.2	3.7	3.2	3.1	3.4	3.2	3.0	3.4	3.5
Other Source ^d	0.3	0.5	0.4	0.5	0.4	0.7	0.5	0.4	0.5

(N=816) 0.5%									
Security Clearance (N=519) 0.3%	0.1	2.0	0.6	0.1	0.1	0.1	0.2	0.1	0.1
Family Member (N=195) 0.1%	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.1

^a 154 enlisted soldiers were of unknown occupation.

^b 352 enlisted soldiers were recorded in a Non-occupational other category which include students, patients, prisoners, officers in training and enlisted soldiers in bootcamp.

^d Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, and Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

In analyses unadjusted for age or education or other attributes, lower-ranking (O1-O3) officers were more likely to be referred by a Commander and through an investigation (Table 10). They were also significantly more likely to be referred subsequent to a DUI incident than higher-ranking commissioned officials (OR = 1.79, 95% CI = 1.38 – 2.32), while higher-ranked officers were significantly more likely to self refer than O1-O3 officers (OR = 2.47, 95% CI = 2.04 – 2.99).

Table 10. Rank and source of referral to ASAP among active-duty Army officers, 1988-2003.

Source of referral	Rank - Officers ^a			
	Warrant Officer (N=881) Column %	O1-O3 (N=2,512) Column %	O4-O5 (N=599) Column %	O6-O11 (N=104) Column %
Commander/Supervisor (N=951) 23.2%	19.4	26.6	16.0	16.4
Investigation/Apprehension (N=932) 22.8%	24.1	24.5	15.4	11.5
Self (N=862) 21.0%	20.8	17.4	34.6	32.7
Driving while Under Influence (N=698) 17.4%	16.1	18.9	12.2	7.7
Medical/Physician-directed (N=523) 12.8%	15.6	10.2	16.9	26.0
Other Source ^b (N=130) 3.2%	4.0	2.3	5.0	5.8

^a 12 Commanding Officers were of unknown rank.

^b Other sources include Commander-Directed Biochemical, Family Member Referral, Security Clearance, Voluntary Test and all other, unspecified sources of referral.

Scientists and professionals were significantly more likely than others to self-refer (OR = 2.09, 95% CI = 1.34 – 3.25) (Table 11). Health care officers had lower odds of referral by investigation than other officers (OR = 0.48, 95% CI = 0.36 – 0.63).

Table 11. Occupation and source of referral to ASAP among active-duty Army officers, 1988-2003.

Source of referral	Occupation - Officers ^{a,b}							
	General Officer/ Executive (N=6) Column %	Tactical Operations Officer (N=1,659) Column %	Intelligence Officer (N=193) Column %	Engineering and Maintenance (N=544) Column %	Scientists & Professionals (N=97) Column %	Health Care (N=530) Column %	Administrators (N=236) Column %	Supplies, Procurement Allied (N=324) Column %
Commander/ Supervisor (N=808) 22.5%	16.7	23.6	18.7	23.0	19.6	21.1	24.2	20.4
Investigation/ Apprehension (N=796) 22.2%	0.0	25.6	22.8	23.0	14.4	13.0	20.3	22.2
Self (N=778) 21.7%	16.7	18.5	22.3	21.9	36.1	26.2	22.5	25.0
Driving while Under Influence (N=632) 17.6%	0.0	18.4	21.2	15.6	9.3	18.1	16.1	17.6
Medical/ Physician-directed (N=457) 12.7%	66.7	11.1	7.8	12.9	15.5	19.1	13.1	11.4
Other Source ^c (N=118) 3.3%	0.0	2.8	7.3	3.7	5.2	2.5	3.8	3.4

^a 20 Officers soldiers were of unknown occupation.

^b 498 officers were listed as “non-occupational” which include patients, prisoners, advanced students and other non-classifiable officer occupational categories.

^c Other sources include Commander-Directed Biochemical, Family Member Referral, Security Clearance, Voluntary Test and all other, unspecified sources of referral.

III. Who was enrolled in the Army's treatment program following an evaluation for alcohol problems?

Of the 188,139 individuals referred for initial evaluation, just over half (57%) were ultimately enrolled in the ASAP treatment program, though some additional soldiers were ultimately referred to the Army's ADAPT education training course (see section V below for more details on those not enrolled). Factors associated with increased likelihood of enrollment subsequent to evaluation include male gender, older age (>35), Indian/Alaskan Native and white racial/ethnic groups, single marital status, lesser educational attainment, and enlisted rank. Indian and Alaskan soldiers had the highest proportion of enrollees of any racial/ethnic group and were significantly more likely to be enrolled than soldiers in all other racial/ethnic groups combined (OR = 1.44, 95% CI = 1.33-1.57), followed by whites (OR=1.21, 95% CI = 1.19 – 1.23), while Blacks were significantly less likely to be enrolled (OR = 0.80, 95% CI = 0.79 – 0.82). Though single soldiers evaluated for an alcohol problem were significantly more likely to be enrolled, the effect size was quite small (OR=1.04, 95% CI = 1.02 – 1.06). There was a strong inverse relationship with education and likelihood of enrollment with less educated soldiers more likely to enroll than soldiers with at least college degrees (OR = 1.45, 95% CI = 1.37 – 1.53). Enrollment was more common among enlisted soldiers than warrant and commissioned officers (58% of enlisted compared to 45% of warrant and commissioned officers). Lower ranked enlisted soldiers were *more* likely to enroll while warrant officers and lower-ranked commissioned officers were *less* likely to enroll. Officers ranked O4-O5 had the greatest likelihood of enrollment when all other ranks were collapsed (OR = 2.25, 95% CI = 2.12 – 3.07), while lower-ranked O1-O3 officers had significantly lower odds of enrollment.

We evaluated the odds of enrollment for each occupational category compared to the collapsed category of "all other occupations" in separate models for enlisted soldiers and officers. Among enlisted occupations, soldiers in support and/or administration occupations were significantly less likely to be enrolled than nearly all other occupational specialties. Enlisted soldiers in the communications/intelligence, electronic equipment repair, and administrative/support fields all had slightly but significantly lower odds of enrollment while electrical and mechanical repair workers had slight yet significant greater odds of enrollment compared to other enlisted soldiers (OR = 1.05, 95% CI = 1.03 – 1.08). Enlisted soldiers with an occupational category of "non-occupational, other" were at substantially lower odds of enrollment (OR = 0.66, 95% CI = 0.56 – 0.77). These non-occupational enlisted soldiers consist of students, prisoners, patients, officers in training and soldiers in bootcamp. Among the officers, scientists and professionals and health care officers were significantly more likely to be enrolled when compared to all other occupational categories. Tactical operations and non-occupational officers were significantly less like to be enrolled (OR = 0.73, 95% CI = 0.64 – 0.82 and OR = 0.76, 95% CI = 0.62 – 0.92, respectively) when compared to all other categories (See Table 12).

Table 12. Demographics of active-duty Army soldiers who were evaluated comparing those who enrolled in ASAP with those who did not, 1988-2003.

Demographics	Enrolled in ASAP N=107,792 (57.3%) Row% / Column%	Not Enrolled N=80,347 (42.7%) Row% / Column%	Odds Ratio ^a	95% Confidence Interval
<i>Gender</i> (83 of unknown gender)				
Male (N=176,630)	57.5 / 94.2	42.5 / 93.3	1.12	1.07 – 1.16
Female (N=11,426)	54.8 / 5.8	45.2 / 6.4	1.00	NA
<i>Age</i> (222 of unknown age)				
<21 (N=48,778)	56.9 / 25.7	43.2 / 26.2	1.00	NA
21-25 (N=86,223)	57.8 / 46.2	42.2 / 45.3	1.04	1.01 – 1.06
26-30 (N=28,886)	56.5 / 15.1	43.5 / 15.7	0.98	0.96 – 1.01
31-35 (N=14,070)	56.9 / 7.4	43.1 / 7.6	1.00	0.96 – 1.04
36-40 (N=7,167)	58.2 / 3.9	41.8 / 3.7	1.06	1.01 – 1.11
>40 (N=2,793)	58.9 / 1.5	41.2 / 1.4	1.09	1.01 – 1.18
<i>Race/Ethnicity</i> (2,050 of unknown race)				
White (N=122,123)	59.0 / 67.4	41.0 / 63.1	1.26	1.23 – 1.29
African-American (N=44,499)	53.3 / 22.2	46.7 / 26.2	1.00	N/A
Hispanic (N=10,179)	54.9 / 5.2	45.1 / 5.8	1.07	1.02 – 1.11
Indian/Alaskan (N=2,461)	66.0 / 1.5	34.1 / 1.1	1.70	1.56 – 1.85
Asian/Pacific Islander (N=2,662)	53.5 / 1.3	46.5 / 1.6	1.01	0.93 – 1.09
Other (N=4,165)	57.7 / 2.3	42.3 / 2.2	1.19	1.12 – 1.27
<i>Marital Status</i> (2,287 of unknown marital status)				
Single (N=114,345)	57.7 / 61.2	42.3 / 60.3	1.05	1.03 – 1.07
Married (N=65,803)	56.5 / 34.5	43.5 / 35.6	1.00	N/A
Widowed/Divorced/ Legally Separated (N=5,704)	58.0 / 3.1	42.0 / 3.0	1.06	1.00 – 1.12
<i>Education</i> (2,359 of unknown education)				
< High School (N=4,861)	58.0 / 2.6	42.0 / 2.5	1.47	1.36 – 1.59
High School Grad/GED/ Alternative Ed. (N=171,838)	57.7 / 92.0	42.3 / 90.5	1.45	1.37 – 1.53
Some College (N=3,717)	55.3 / 1.9	44.7 / 2.1	1.32	1.21 – 1.43
≥College degree (N=5,364)	48.5 / 2.4	51.5 / 3.4	1.00	N/A

Demographics	Enrolled in ASAP N=107,792 (57.3%) Row% / Column%	Not Enrolled N=80,347 (42.7%) Row% / Column%	Odds Ratio ^a	95% Confidence Interval
<i>Rank</i>				
<u>Enlisted Personnel</u> N=184,031 (19 of unknown rank)	N=105,958 (57.6%)	N=78,073 (42.4%)		
E1-E4 (N=146,361)	58.3 / 80.6	41.7 / 78.2	1.07	1.01 – 1.12
E5-E6 (N=31,091)	54.3 / 15.9	45.7 / 18.2	0.91	0.86 – 0.96
E7-E9 (N=6,560)	56.7 / 3.5	43.3 / 3.6	1.00	N/A
<u>Officers</u> N=4108 (12 of unknown rank)	N= 1,834 (44.6%)	N = 2,274 (55.4%)		
Warrant Officer (N=881)	45.2 / 21.7	54.8 / 21.2	0.52	0.33 – 0.80
O1 – O3 (N=2,512)	38.9 / 53.3	61.1 / 67.5	0.40	0.26 – 0.61
O4 – O5 (N=599)	64.1 / 20.9	35.9 / 9.5	1.12	0.71 – 1.75
O6 – O11 (N=104)	61.5 / 3.5	38.5 / 1.7	1.00	N/A
<i>Occupation category</i>				
<u>Enlisted personnel</u> N=184,031 (126 of unknown occupation)	N=105,958 (57.6%)	N=78,073 (42.4%)		
Infantry/Gun crew (N=58,795)	57.9 / 32.1	42.1 / 31.7	1.05	1.02 – 1.09
Electronic Equipment repair (N=10,127)	55.4 / 5.3	44.6 / 5.8	0.95	0.91 – 1.00
Communications/ Intelligence (N=21,331)	55.6 / 11.2	44.4 / 12.1	0.92	1.00
Health Care (N=11,774)	58.0 / 6.4	42.0 / 6.3	1.06	1.01 – 1.11
Technical/Allied special (N=4,623)	57.5 / 2.5	42.6 / 2.5	1.04	0.97 – 1.11
Support/Administrative (N=20,121)	56.6 / 10.7	43.4 / 11.2	1.00	N/A
Electrical/Mechanical equipment repair (N=30,429)	58.6 / 16.8	41.4 / 16.1	1.09	1.05 – 1.13
Crafts workers (N=4,829)	61.4 / 2.8	38.6 / 2.4	1.22	1.14 – 1.30
Service/Supply (N=21,216)	58.6 / 11.7	41.4 / 11.3	1.09	1.04 – 1.13
Non-occupational/ Other ^b (N=660)	47.1 / 0.3	52.9 / 0.5	0.68	0.58 – 0.80
<u>Officers</u> N=4,108 (20 officers of unknown occupation)	N= 1,834 (44.6%)	N = 2,274 (55.4%)		
General Officer/ Executive (N=6)	16.7 / 0.1	83.3 / 0.2	--	--

Demographics	Enrolled in ASAP N=107,792 (57.3%) Row% / Column%	Not Enrolled N=80,347 (42.7%) Row% / Column%	Odds Ratio ^a	95% Confidence Interval
Tactical operations (N=1,659)	39.8 / 36.0	60.2 / 43.9	0.51	0.42 – 0.63
Intelligence Officer (N=193)	39.9 / 4.2	60.1 / 5.1	0.52	0.36 – 0.73
Engineering & Maintenance Officer (N=544)	46.1 / 13.7	53.9 / 12.9	0.67	0.52 – 0.85
Scientists& Professionals(N=97)	61.9 / 3.3	38.1 / 1.6	1.26	0.79 – 2.02
Health Care Officer (N=530)	56.2 / 16.3	43.8 / 10.2	1.00	N/A
Administrator (N=236)	50.0 / 6.4	50.0 / 5.2	0.78	0.57 – 1.07
Supply, Procurement, Allied Officer (N=325)	49.5 / 8.8	50.5 / 7.2	0.76	0.57 – 1.02
Non-occupational/Other ^c (N=498)	38.6 / 10.5	61.5 / 13.5	0.49	0.38 – 0.63

^a Odds ratios are unadjusted.

^b Enlisted personnel listed as “non-occupational/other” include students, patients, prisoners, officers in training and enlisted soldiers in bootcamp.

^c Officers listed as “non-occupational/other” include patients, prisoners, advanced students and other non-classifiable officer occupational categories.

IV. Who was referred for an alcohol evaluation but not enrolled in the Army’s treatment program and why?

About 43% of the 188,139 soldiers initially referred to ASAP for an alcohol evaluation were never enrolled in a treatment program. Though not officially “enrolled” in one of the Army’s tracks for treating alcohol-related disorders, approximately two-thirds of these non-enrolled soldiers (N = 53,581) were referred to ADAPT, a mandatory short alcohol education and prevention short course.

Nineteen percent of those evaluated but not enrolled were not enrolled because the counselor determined that the soldier did not have a substance abuse problem. Nine percent were not enrolled because their Commander recommended against enrollment. Nearly four percent were referred to resources for problems other than substance abuse such as family counseling or mental health services. Approximately 2% of soldiers were not enrolled because they refused services. Less than 1% of soldiers (N=46) were not enrolled because their urinalysis results were determined to be due to legally-prescribed medication

Reasons for non-enrollment were associated with the demographic characteristics of the soldier under evaluation. Sixty-seven percent of non-enrolled males were sent to ADAPT prevention training compared to 60% of non-enrolled females. Female soldiers

referred for alcohol evaluation were more likely than male soldiers to be found free of an alcohol problem (OR = 1.26, 95% CI = 1.17 – 1.35), and were over two and a half times more likely than males to be referred for services other than alcohol treatment (OR = 2.57, 95% CI = 2.30 – 2.86) (Table 13).

Table 13. Gender and reason for non-enrollment in ASAP among active-duty Army soldiers referred to ASAP, 1988-2003.

Reason for non-enrollment	Gender ^a	
	Male (N=75,147) Column %	Female (N=5,169) Column %
Refer to Alcohol/Drug Abuse Prevention Training	67.2	59.8
No Alcohol/Drug Problem	18.5	22.2
Commander Decided not to Enroll Patient	9.4	8.1
Refer to Other Than Alcohol/Drug Resources	3.3	8.0
Patient Refused Services	1.7	1.8
Prescribed Medication	0.1	0.2

^a 31 non-enrolled soldiers were of unknown gender.

Among those not enrolled, there was a strong and significant increasing likelihood of referral to the ADAPT program with decreasing age (Chi Square for linear trend = 1224, $p < .005$). Soldiers under age 21 were over three times more likely than soldiers over 40 to receive this alternative training. There was also a significantly increased likelihood with age that soldiers were not enrolled because the counselor determined that the soldier did not have an alcohol problem: soldiers over age 40 who were not enrolled were more than twice as likely as those under age 21 who were not enrolled to be found free of a substance abuse problem (Chi-Square for linear trend = 642, $p < .005$). Older soldiers were more likely than younger ones to be referred for services other than for substance abuse (Chi Square for trend = 788, $p < .005$).

Table 14. Age and reason for non-enrollment in ASAP among active-duty Army soldiers, 1988-2003.

Reason for non-enrollment	Age ^a					
	< 21 (N=21,049) Column %	21- 25 (N=36,421) Column %	26-30 (N=12,277) Column %	31-35 (N=6,066) Column %	36-40 (N=2,994) Column %	> 40 (N=1,147) Column %
Refer to Alcohol/ Drug Abuse Prevention Training	72.6	67.9	63.1	58.5	51.7	41.3
No Alcohol/ Drug Problem	15.3	17.5	21.9	24.0	27.5	30.7
Commander Decided not to Enroll Patient	8.6	10.0	8.8	9.0	9.1	10.3
Refer to Other Than Alcohol/ Drug Resources	2.2	2.8	4.5	6.5	8.8	12.6
Patient Refused Services	1.3	1.7	1.7	1.9	2.9	5.0
Prescribed Medication	0.1	0.1	0.0	0.1	0.1	0.2

^a 93 non-enrolled soldiers were of unknown age.

Black soldiers referred to ASAP but not enrolled were more likely than soldiers in other racial/ethnic groups to be found free of any alcohol problem after evaluation (OR = 1.15, 95% CI = 1.11 – 1.20) (Table 14).

Table 15. Race/Ethnicity and reason for non-enrollment in ASAP among active-duty Army Soldiers, 1988-2003.

Reason for Non-enrollment	Race/Ethnicity ^a					
	White (N=50,083) Column %	Black (N=20,780) Column %	Hispanic (N=4,594) Column %	Indian/Alaskan (N=838) Column %	Asian/ Pacific Islander (N=1,239) Column %	Other (N=1,763) Column %
Refer to Alcohol/Drug Abuse Prevention Training	66.5	65.3	71.1	69.1	70.8	68.1
No Alcohol/Drug Problem	18.5	20.4	15.6	16.8	16.3	18.9
Commander Decided not to Enroll Patient	9.5	9.1	8.6	8.6	7.5	9.1
Refer to Other Than Alcohol/Drug Resources	3.7	3.6	2.8	2.9	3.6	2.9
Patient Refused Services	1.7	1.6	1.8	2.5	1.8	1.0
Prescribed Medication	0.1	0.0	0.1	0.1	0.0	0.0

^a 1,050 non-enrolled soldiers were of unknown ethnicity.

Reason for non-enrollment also covaried with marital status: single soldiers were more likely than married soldiers and no-longer-married soldiers to be referred to prevention training (ADAPT). They were also less likely than other groups to be found free of an alcohol problem or to be referred to services to treat problems other than those related to substance abuse.

Table 16. Marital Status and reason for non-enrollment in ASAP among active-duty Army soldiers, 1988-2003.

Reason for non-enrollment	Marital status ^a		
	Single (N=48,418) Column %	Married (N=28,614) Column %	No longer married (N=2,398) Column %
Refer to Alcohol/Drug Abuse Prevention Training	70.9	60.3	61.3
No Alcohol/Drug Problem	16.0	22.9	22.2
Commander Decided not to Enroll Patient	9.3	9.3	9.1
Refer to Other Than Alcohol/Drug Resources	2.3	5.5	5.5
Patient Refused Services	1.6	1.9	1.8
Prescribed Medication	0.1	0.1	0.1

^a 917 non-enrolled soldiers were of unknown marital status.

Higher education was associated with an increased likelihood of non-enrollment because the counselor found no evidence of an alcohol problem: soldiers with at least some college education had a 48% greater chance than soldiers with a high school degree or less of not being enrolled for this reason (OR = 1.48, 95% CI = 1.38 – 1.59). Soldiers with no-greater-than a high school education were also 1.52 times more likely than soldiers with greater education to be referred to ADAPT prevention training than non-enrolled soldiers with at least some college education (OR = 1.49, 95% CI = 1.40 – 1.59) (Table 17).

Table 17. Education and reason for non-enrollment in ASAP among active-duty Army soldiers, 1988-2003.

Reason for non-enrollment	Education ^a			
	Less than High School (N=2,042) Column %	High School/ GED (N=72,684) Column %	Some college (N=1,660) Column %	College and above (N=2,764) Column %
Refer to Alcohol/ Drug Abuse Prevention Training	67.9	67.3	57.3	58.4
No Alcohol/Drug Problem	17.4	18.4	25.0	25.0
Commander Decided not to Enroll Patient	10.0	9.3	9.6	7.3
Refer to Other Than Alcohol/Drug Resources	2.8	3.4	6.1	7.2

Patient Refused Services	1.7	1.6	1.9	2.1
Prescribed Medication	0.2	0.1	0.1	0.1

^a 1,197 non-enrolled soldiers had an unknown education level.

Higher-ranking enlisted soldiers (E7+) were more likely than soldiers of lower rank (E1-E4) to not be enrolled because they were found to have no alcohol problem (OR = 1.91, 95% CI = 1.76 – 2.08). Often they were found to have problems other than those related to alcohol. Non-enrolled E7-E9 soldiers were over 3 times more likely than non-enrolled enlisted soldiers of lower ranks to be referred to services other than alcohol or drug services.

Few significant differences in reasons for non-enrollment were found amongst different occupations. Infantry soldiers had slightly, but significantly, higher odds than all other non-enrolled enlisted soldiers of not being enrolled because of Commander intervention (OR = 1.20, 95% CI = 1.14 – 1.27). Health care workers were significantly more likely to be referred to services for reasons other substance abuse (OR = 1.75, 95% CI = 1.54 – 1.99).

Table 18. Rank and reason for non-enrollment in ASAP among enlisted active-duty Army soldiers, 1988-2003.

Reason for non-enrollment	Rank - Enlisted ^a		
	E1-E4 (N=61,016) Column %	E5-E6 (N=14,208) Column %	E7-E9 (N=2,839) Column %
Refer to Alcohol/Drug Abuse Prevention Training (N=52,312) 67.0%	69.2	61.3	49.4
No Alcohol/Drug Problem (N=14,391) 18.4%	16.7	23.7	29.6
Commander Decided not to Enroll Patient (N=7,344) 9.4%	9.8	7.9	8.6
Refer to Other Than Alcohol/Drug Resources (N=2,668) 3.4%	2.7	5.5	9.6
Patient Refused Services (N=1,305) 1.7%	1.6	1.6	2.8
Prescribed Medication (N=43) 0.1%	0.1	0.1	0.0

^a 10 non-enrolled enlisted soldiers were of an unknown rank.

Table 19. Occupation and reason for non-enrollment in ASAP among enlisted active-duty Army soldiers, 1988-2003.

Reason for non-enrollment	Occupation-enlisted ^{a,b}								
	Infantry/ Gun Crew (N=24,769) Column %	Electronic Equipment Repair (N=4,517) Column %	Communi- cation & Intelligence (N=9,478) Column %	Health Care (N=4,946) Column %	Technical Allied Special (N=1,967) Column %	Support/ Admin. (N=8,740) Column %	Electrical Mechanical equipment repairs (N=12,592) Column %	Craft- workers (N=1,866) Column %	Service/ Supply (N=8,786) Column %
Refer to Alcohol/ Drug Abuse Prevention Training (N=52,014) 67.0%	68.1	69.3	67.3	62.8	65.8	64.6	68.0	67.6	65.8
No Alcohol/Drug Problem (N=14,347) 18.5%	17.1	16.1	19.5	20.4	20.6	20.3	18.5	17.2	19.4
Commander Decided not to Enroll Patient (N=7,310) 9.4%	10.5	9.1	8.7	9.7	8.2	8.5	9.0	10.6	8.6
Refer to Other Than Alcohol/ Drug Resources (N=2,652) 3.4%	2.5	3.8	3.1	5.6	3.7	4.8	3.0	2.7	4.3
Patient Refused Services (N=1,295) 1.7%	1.8	1.7	1.5	1.6	1.6	1.7	1.4	1.8	1.9
Prescribed Medication (N=43) 0.1%	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1

^a 63 non-enrolled enlisted soldiers had an unknown occupation.

^b 349 non-enrolled soldiers were classified as Non-occupational others. This group includes a variety of titles such as students, patients, prisoners, officers in training and enlisted soldiers in bootcamp.

Most officers not enrolled in ASAP were either enrolled in an alternate prevention program (56%) or were found not to have an alcohol problem (27%). Higher-ranking officers (O6 – O11) were over 10 times as likely as other officers to be referred to resources other than alcohol or drugs (OR = 10.76, 95% CI = 5.36 – 21.51). Tactical operations officers were the occupational group most likely to be sent to ADAPT instead of enrollment compared to all other officers (OR = 1.68, 95% CI = 1.40 – 2.02).

Table 20. Rank and reason for non-enrollment in ASAP among active-duty Army officers, 1988-2003.

Reason for non-enrollment	Rank - officers ^a			
	Warrant Officer (N=483) Column %	O1-O3 (N=1,534) Column %	O4-O5 (N=215) Column %	O6-O11 (N=40) Column %
Refer to Alcohol/Drug Abuse Prevention Training (N=1,262) 55.5%	52.8	59.8	38.6	15.0
No Alcohol/Drug Problem (N=622) 27.4%	30.6	26.6	26.5	22.5
Refer to Other Than Alcohol/Drug Resources (N=191) 8.4%	5.8	7.0	17.7	42.5
Commander Decided not to Enroll Patient (N=151) 6.6%	8.9	5.4	9.3	12.5
Patient Refused Services (N=43) 1.9%	1.9	1.0	7.4	7.5
Prescribed Medication (N=3) 0.1%	0.0	0.1	0.5	0.0

^a 2 non-enrolled Officers were of an unknown rank.

Table 21. Occupation and reason for non-enrollment in ASAP among active-duty Army officers, 1988-2003.

Reason for non-enrollment	Occupation – Officers ^{a,b}							
	General Officer/ Executive (N=5) Column %	Tactical Operations Officer (N=999) Column %	Intelligence Officer (N=116) Column %	Engineering and Maintenance (N=293) Column %	Scientists & Professionals (N=37) Column %	Health Care (N=232) Column %	Administrators (N=118) Column %	Supplies, Procurement Allied (N=164) Column %
Refer to Alcohol/ Drug Abuse Prevention Training (N=1,120) 57.0%	0.0	63.3	55.2	55.6	40.5	42.7	54.2	50.6
No Alcohol/ Drug Problem (N=505) 25.7%	0.0	23.8	26.7	29.4	32.4	30.6	22.0	25.0
Commander Decided not to Enroll Patient (N=137) 7.0%	0.0	7.1	4.3	6.8	10.8	8.2	5.1	7.3
Refer to Other Than Alcohol/ Drug Resources (N=159) 8.1%	100.0	5.1	11.2	6.8	8.1	12.9	14.4	12.2
Patient Refused Services (N=40) 2.0%	0.0	0.6	2.6	1.4	8.1	5.2	4.2	4.3
Prescribed Medication (N=3) 0.2%	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.6

^a 4 non-enrolled Officers had an unknown occupation.

^b 306 non-enrolled officers were classified as “non-occupational” which include patients, prisoners, advanced students and other non-classifiable officer occupational categories.

V. Is referral mechanism associated with whether or not a soldier who is evaluated for an alcohol problem ultimately gets enrolled for treatment?

A. Is referral mechanism associated with enrollment?

Self-referred soldiers were almost three times more likely to enroll than soldiers referred by other means (OR = 2.79, 95% CI = 2.72 – 2.87). Surprisingly, only 51% of those referred through the medical system were ultimately enrolled in ASAP (OR = 0.73, 95% CI = 0.71 – 0.75), and soldiers initially referred by a Commander were also less likely to enroll (OR = 0.86, 95% CI = 0.85 – 0.88). Soldiers referred by a family member were not likely to be enrolled in the ASAP program (OR = 0.63, 95% CI = 0.48 – 0.82), and neither were soldiers referred to ASAP after an investigation or legal apprehension (OR = 0.65, 95% CI = 0.64 – 0.66). Soldiers evaluated for security clearances were significantly less likely to be enrolled than soldiers referred by other sources (OR = 0.16, 95% CI = 0.13 – 0.20).

Table 22. Source of referral to ASAP and enrollment decision of active-duty Army soldiers, 1988-2003.

Source of referral	Enrollment Decision	
	Enrolled (N=107,792) Column %	Not Enrolled (N=80,347) Column %
Commander/Supervisor	28.5	31.5
Investigation/ Apprehension	19.6	27.2
Self	24.9	10.6
Medical/Physician-directed	11.1	14.6
Driving while Under Influence	11.4	12.0
Commander-directed Biochemical	4.0	2.8
Other Source ^a	0.3	0.6
Security Clearance	0.1	0.6
Family Member	0.1	0.2

^a Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, and Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

B. Is the initial referral source associated with the reason they were not enrolled?

Medical referral for alcohol evaluations that do not result in enrollment in the Army's alcohol treatment program:

Of the 11,708 non-enrolled soldiers initially referred for alcohol evaluation by a medical doctor, most (47%) were referred to ADAPT for prevention training.

Surprisingly, many soldiers referred for alcohol evaluation by a medical care provider were not enrolled because the alcohol counselor determined that the soldier did not have a substance abuse problem after all. This type of non-enrollment occurred more commonly in this group than among non-enrolled soldiers referred by other mechanisms (OR = 2.07, 95% CI = 1.98 – 2.17). Medically-referred soldiers not enrolled were also more 50% more likely than their non-enrolled peers referred via other mechanisms to have their Commander intervene and not recommend treatment (OR = 1.54, 95% CI = 1.45 – 1.63).

Referrals for alcohol evaluation after DUI that do not result in enrollment in the Army's alcohol treatment program:

The vast majority of those originally referred after a DUI but not enrolled in ASAP were instead placed in an alternative drug and alcohol prevention program (86%, N = 8,250).

Family member referral for alcohol evaluations that do not result in enrollment in the Army's alcohol treatment program:

Family member referrals often appear to occur when there are a range of problems and may not be alcohol-related. Non-enrolled soldiers referred by family members were nearly 10 times as likely to be referred to services other than alcohol and/or drug treatment than non-enrolled soldiers referred by other means (OR = 9.75, 95% CI = 6.32 – 14.96).

Referrals for alcohol evaluations after investigation that do not result in enrollment in the Army's alcohol treatment program:

Soldiers initially referred after an investigation were significantly less likely than soldiers with other sources of referral to be denied enrollment by a Commander (OR = 0.69, 95% CI = 0.65 – 0.73).

Table 23. Source of referral to ASAP and reason for non-enrollment of active-duty Army soldiers, 1988-2003.

Source of referral	Reason for non-enrollment					
	Refer to alcohol/ drug prevention	No alcohol or drug problem	Commander decided to not enroll	Refer to other resources	Patient refused services	Prescribed medication
	(N=53,581) Row % Column %	(N=15,014) Row % Column %	(N=7,495) Row % Column %	(N=2,861) Row % Column %	(N=1,350) Row % Column %	(N=46) Row % Column %
Commander/ Supervisor (N=25,268)	68.1 32.1	19.6 32.9	8.6 29.0	2.8 24.7	0.9 17.6	0.0 19.6
Investigation/ Apprehension (N=21,873)	72.7 29.7	18.3 26.7	7.2 21.0	1.3 10.0	0.5 7.5	0.0 6.5
Medical/Physician-directed (N=11,708)	47.0 10.3	29.6 23.1	12.8 20.0	7.4 30.1	3.2 27.7	0.1 17.4
Driving while Under Influence (N=9,615)	85.8 15.4	2.7 1.8	8.7 11.1	1.1 3.7	1.6 11.6	0.1 17.4
Self (N=8,541)	56.9 9.1	19.2 10.9	10.5 12.0	8.9 26.6	4.4 27.9	0.1 10.9
Commander-directed Biochemical (N=2,274)	64.7 2.8	12.1 1.8	18.0 5.5	2.1 1.6	2.6 4.4	0.5 23.9
Other Source ^a (N=500)	44.4 0.4	29.2 1.0	13.2 0.9	7.4 1.3	5.6 2.1	0.2 2.2
Security Clearance (N=450)	31.1 0.3	54.9 1.7	7.6 0.5	5.8 0.9	0.7 0.2	0.0 0.0
Family Member (N=118)	29.7 0.1	25.4 0.2	6.8 0.1	26.3 1.1	11.0 1.0	0.9 2.2

^a Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, and Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

While Commander referral to ASAP was the most common referral source, accounting for nearly a third of the evaluated population, Commander recommendation not to enroll a soldier was the third most common reason for non-enrollment. In fact, 29% percent of soldiers not enrolled because of a command decision were initially referred for an evaluation by a Commander or supervisor, though Commander-referred soldiers are less likely than other referred soldiers to experience Commander intercession (OR = 0.88, 95% CI = 0.84 – 0.93).

We analyzed the subgroup of soldiers originally referred by a Commander for evaluation but then not enrolled because of Command intercession and compared them to Commander-referred soldiers enrolled in ASAP. While our results did not yield many statistically significant associations, certain findings are worth noting (data not shown). Black soldiers were more likely to not be enrolled because of Commander intercession than all other races (OR = 1.15, 95% CI = 1.03 – 1.28). Commander-referred soldiers with a high school degree, or degree equivalent, were 24% less likely to not enroll because of Commander intercession compared to soldiers with other education levels (OR = 0.76, 95% CI = 0.65 – 0.88). Enlisted soldiers in health care who were Commander-referred were significantly more likely than our referent group of enlisted support and administrative staff to not enroll because of Commander decision, and this difference remained when we collapsed all other occupational categories (OR = 1.24, 95% CI = 1.05 – 1.46).

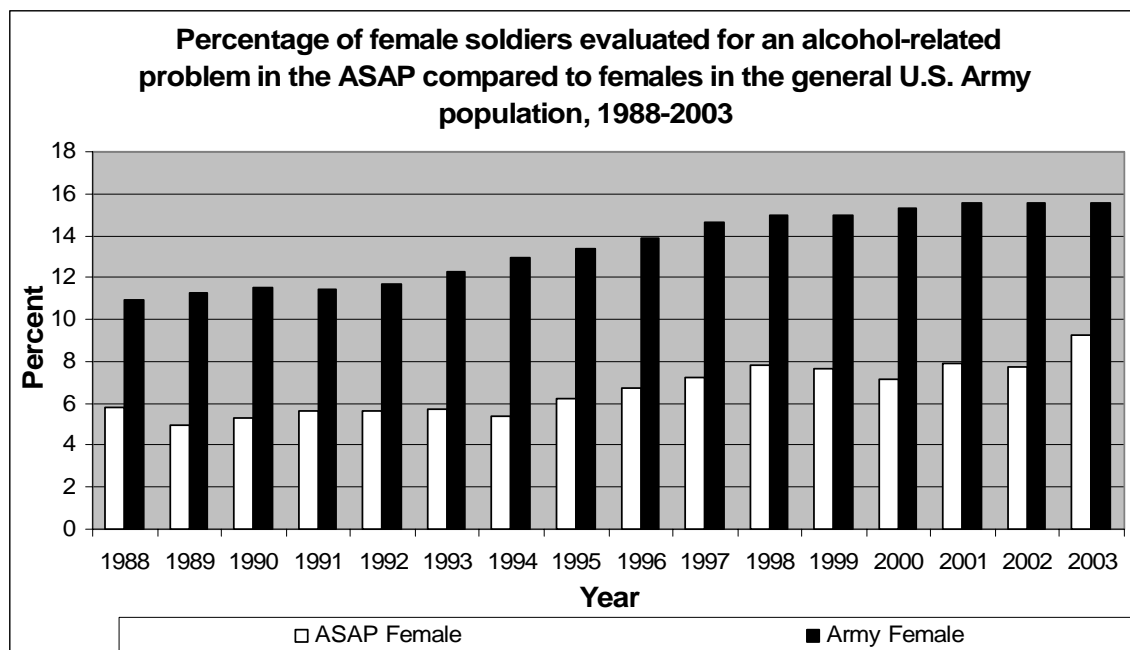
We also analyzed the subgroup of soldiers originally referred by medical personnel and compared those not enrolled because a Commander or supervisor intervened to those enrolled in ASAP. We found a few statistically significant differences by demographic characteristics (data not shown). For example, such interventions were more likely to happen with blacks than other ethnicities (OR = 1.16, 95% CI = 1.02 – 1.32), and were significantly less likely to occur with soldiers of Indian/Alaskan descent compared to all other ethnicities (OR = 0.52, 95% CI = 0.27 – 0.99). Those in infantry compared to all other enlisted occupations (OR = 1.24, 95% CI = 1.10 – 1.39) were more likely to have a Commander decide not to enroll them in ASAP treatment among the medically-referred.

VI. Who gets a second chance: Repeat Referrals for Alcohol Evaluation?

There was a slightly lower rate of repeat referrals in the follow-up period for those whose first alcohol evaluation was recorded between 1998 and 2003 – (15%) compared with those whose initial alcohol evaluation was in 1988-1992 (23%) or 1993-1997 (21%). Variations might be explained by actual changes in recidivism, changes in overall rates of problems due to changes in the demographic composition of the Army population over time, changes in detection of alcohol-related problems, changes in likelihood of referral given identification of a problem, or by the fact that there is less opportunity to have a repeat event in the second period because of shorter follow-up time. It is not possible with these data to test all of these hypotheses. But, additional analyses were conducted in order to assess the effects of changes in the gender composition of the Army. There have

been important shifts over time in the demographic composition of the Army with the proportion of female enlisted soldiers rising approximately 43%, from 10.9% to 15.6% over the study period from 1988 to 2003 (Data not shown. Source: DMDC personnel files, TAIHOD data, 2005). Because women tend on average to engage less frequently in certain high risk drinking practices, it is possible that lower recidivism rates are explained in part by greater representation of women in the Army in more recent years. However, the data do not support this hypothesis. While the proportion of persons referred to ASAP who are women increased over the study period (58% increase from 5.8% to 9.2%) (see Figure 1), this increase is larger than the actual increase in the proportion of women in the total population. This suggests that the gender difference in risk of alcohol referral is getting larger even after accounting for the growing number of females in the general Army population.

Figure 1. Percentage of female soldiers evaluated for an alcohol-related problem in the ASAP compared to females in the general U.S. Army population, 1988-2003



A. How does initial referral and outcome of evaluation relate to likelihood of subsequent repeat referrals for alcohol problems?

Between 1988 and 2000, 96,685 soldiers were enrolled in ASAP to treat an alcohol problem. Subsequent to enrollment, soldiers were evaluated and their progress reported on report forms. The number of progress reports (or follow-ups) after enrollment ranged from zero to 19 per soldier. Most soldiers (47%) had only one follow-up report, 26% had two and an additional 26% had more than two. Some of the soldiers enrolled in the program (18.3%) were referred and evaluated a second time and of those re-evaluated 76% were then re-enrolled in ASAP for either alcohol or drug abuse.

Likelihood of recidivism (future enrollments) was associated with the number of follow-ups for prior enrollment. Soldiers with five or more follow-ups after their first enrollment were more likely to be enrolled again for a new alcohol-related event than soldiers with less than 5 follow-ups to their first enrollment (OR = 1.19, 95% CI = 1.11 – 1.28). Even using a cut-off of three follow-ups, we still notice an increased chance of re-enrollment among soldiers with more follow-ups: soldiers with three or more follow-ups were slightly but significantly more likely to be enrolled again in ASAP (OR = 1.11, 95% CI = 1.07 – 1.16) compared to soldiers with only one or two follow-ups.

An association was also found between the likelihood of re-enrollment and the referral source from a soldier's first evaluation/enrollment for alcohol. Enrolled soldiers referred by Commander-directed biochemical testing were less likely to be enrolled again compared with enrolled soldiers initially referred by other means (OR = 0.61, 95% CI = 0.54 – 0.68). This was also true for soldiers initially enrolled after a DUI (OR = 0.64, 95% CI = 0.59 – 0.68). On the other hand, enrolled soldiers who self-referred or who were referred by a Commander, had slightly, yet significantly, greater odds of future alcohol or drug enrollments (OR = 1.20, 95% CI = 1.15 – 1.25 and OR = 1.18, 95% CI = 1.13 – 1.23, respectively).

Table 24. Subsequent enrollments in ASAP according to source of referral at initial enrollment for enrolled active-duty Army soldiers, 1988-2000.

Source of Referral ^a	Subsequent ASAP Enrollments			
	No future enrollments	Future alcohol enrollments (no drug)	Future drug enrollments (no alcohol)	Future alcohol and future drug enrollments
	(N=83,192) Row % Column %	(N=12,258) Row % Column %	(N=1,076) Row % Column %	(N=159) Row % Column %
Commander/ Supervisor	84.6 27.9	13.9 31.1	1.3 33.1	0.2 33.3
Investigation/ Apprehension	86.1 20.9	12.6 20.8	1.1 19.9	0.2 20.1
Self referral	84.4 24.3	14.4 28.0	1.1 24.5	0.2 25.8
Medical/Physician- directed referral	87.6 11.7	11.3 10.2	0.9 8.9	0.2 14.5
Driving while Under Influence	90.3 11.1	8.9 7.4	0.8 7.2	0.0 2.5
Command-directed biochemical	90.9 3.8	7.2 2.0	1.7 5.6	0.1 2.5
Other Source ^b	87.4 0.3	11.3 0.3	1.3 0.4	0.0 0.0
Family referral	89.8 0.1	7.1 0.1	3.1 0.3	0.0 0.0
Security Clearance	78.2	16.4	3.6	1.8

	0.1	0.1	0.2	0.6
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^a 38 enrolled soldiers did not have a listed source of referral at their first evaluation.

^b Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, and Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

B. How often do soldiers who were initially evaluated for alcohol problem but not enrolled end up back in the system for second evaluation? How does the initial referral source relate to this?

70,140 soldiers evaluated for an alcohol problem between 1988 and 2000 were not enrolled. Twenty-two percent (N = 15,228) of them were subsequently referred to ASAP at a later date for either an alcohol or drug evaluation. And among these re-evaluated soldiers, 68% were then enrolled in ASAP for either an alcohol or drug problem (N = 10,391). Future enrollments for soldiers not enrolled at their first evaluations were associated with the referral mechanism at their first event. For example, those originally referred because of Commander-directed biochemical testing were significantly less likely than other non-enrolled soldiers to enroll after a future evaluation (OR = 0.77, 95% CI = 0.66 – 0.89), as were soldiers originally referred because of a DUI (OR = 0.63, 95% C = 0.59 – 0.69). Soldiers not enrolled at their first evaluation but who were more likely to be enrolled at subsequent evaluations were those initially referred by a Commander (OR = 1.21, 95% CI = 1.16 – 1.26) and soldiers who initially self referred (OR = 1.35, 95% CI = 1.26 – 1.44).

Table 25. Subsequent enrollments to ASAP according to source of referral at initial evaluation for active-duty Army soldiers not enrolled at their first evaluation, 1988-2000.

Source of Referral	Subsequent ASAP Enrollments			
	No future enrollments	Future alcohol enrollments (no drug)	Future drug enrollments (no alcohol)	Future alcohol and future drug enrollments
	(N=59,749) Row % Column %	(N=9,314) Row % Column %	(N=869) Row % Column %	(N=208) Row % Column %
Commander/ Supervisor	83.5 30.8	14.8 35.0	1.4 35.1	0.3 32.2
Investigation/ Apprehension	85.3 28.7	13.2 28.5	1.3 29.0	0.3 26.9
Self	81.5 9.8	16.8 12.9	1.3 10.7	0.4 12.5
Medical/Physician- directed	87.1 15.8	11.5 13.3	1.0 12.7	0.4 19.2
Driving while Under Influence	89.7 11.1	9.4 7.5	0.8 6.9	0.1 3.9
Command-directed biochemical	88.2 2.7	9.2 1.8	2.1 4.4	0.6 4.8

Other Source ^a	88.4 0.6	10.6 0.5	0.9 0.5	0.0 0.0
Family	86.6 0.2	8.8 0.1	2.6 0.4	0.0 0.0
Security Clearance	87.0 0.4	11.2 0.3	1.5 0.5	0.4 0.5

^a Other sources include Applicant/Accession Test, Mishap/Accident, Voluntary Test, and Adolescence Substance Abuse Counseling Referral, and all other, unspecified sources of referral.

Reason for non-enrollment at the time of a soldier's first evaluation was also associated with patterns of subsequent enrollment. Soldiers that were initially sent to ADAPT for a prevention program were more likely than other non-enrolled soldiers to be later enrolled in ASAP for drug or alcohol abuse (OR = 1.24, 95% CI = 1.18 – 1.30). Soldiers not enrolled at their first evaluation because of Commander intervention were significantly less likely to have an eventual ASAP enrollment than other non-enrolled soldiers (OR = 0.67, 95% CI = 0.62 – 0.73).

Table 26. Subsequent referrals to ASAP for active-duty Army soldiers not enrolled at their first evaluation according to non-enrollment reason, 1988-2000.

Reason for non-enrollment	Subsequent ASAP Enrollments			
	No future enrollments (N=59,749) Row % Column %	More alcohol enrollments (no drug) (N=9,314) Row % Column %	Future drug enrollments (no alcohol) (N=869) Row % Column %	Future alcohol and future drug enrollments (N=208) Row % Column %
Referred to Alcohol or Drug Prevention	84.3 64.8	14.2 69.8	1.3 68.2	0.3 62.5
No Alcohol or Drug Problem	85.7 20.1	12.7 19.2	1.3 20.3	0.4 23.6
Commander decided not to Enroll	89.3 9.7	9.7 6.8	0.9 6.9	0.1 4.3
Referred to Other than Alcohol/Drug Service	87.0 3.9	11.1 3.2	1.3 3.8	0.6 8.2
Patient Refused Services	89.0 1.5	10.0 1.1	0.7 0.8	0.3 1.4
Prescribed Medication	88.2 0.1	11.8 0.0	0.0 0.0	0.0 0.0

Discussion

Soldiers referred and screened for alcohol problems comprise a large and diverse population. Unadjusted analyses suggest that certain demographic factors are more common among soldiers referred to the Army's alcohol evaluation program including being single, young, male, white or Native American/Alaskan native, in the infantry, of low occupational rank and having few years of education. These results are consistent with those reported in other studies of alcohol abuse and misuse patterns within the Army. *Bray et al.* found that young, single, less well-educated, non-Hispanic Whites and lower-ranked soldiers reported higher rates of alcohol consumption (14) and *Williams et al.* (2002) found that craft workers and infantrymen were more likely to abuse alcohol (50). These results suggest that the ASAP referral system is successful at detecting segments of the population who are at greater risk for alcohol abuse.

There is evidence of potential interactions between marital status and race in determining risk for alcohol-related problems. Black soldiers referred to ASAP for an evaluation were significantly more likely to be married than single, despite the fact that blacks were only slightly more likely than other racial/ethnic groups to be married in the general Army population. Several studies have evaluated marriage as a modifier of the relationship between race and alcohol abuse (15, 16, 37) and several found that there are important differences. While whites who abuse alcohol have been shown to modify their behavior with age or when they marry, there is some evidence that this not necessarily the case for blacks. For example, *Mudar et al.* (2002) found that alcohol consumption decreased among whites but not among blacks as they transitioned from single to married (37). Our results support these findings.

There may be important gender and marital status interactions as well. Women referred to ASAP were significantly more likely to be no longer married than were men; although, they were also more likely to be no longer married in the general population. There have been a number of studies examining the effect of widowhood, divorce or separation on alcohol abuse. While several have found a positive association (39, 40), some have not. A review by the National Institute on Alcohol Abuse and Alcoholism in 1999 reported that drinking among women was found to be most common among the divorced (38) while *Harford* (1994), for example, found that divorce is associated with a *decrease* in short-term drinking for both men and women (28). Among a study by *Gomberg* (1995) of older problem drinkers men were more likely to be married, divorced or separated while women drinkers were more likely to be widows (27).

Seventy-two percent of those referred are under the age of 25. While the Army is disproportionately young - 45% of enlisted soldiers were under the age of 25 in FY98 (6) - the greater representation of younger soldiers in ASAP is consistent with the literature which documents increased risk for alcohol abuse among young adults up to about the age of twenty-five at which point it begins to taper off. Additionally, the armed forces may potentially appeal to more risk-taking individuals who may also be more likely to

drink heavily. Also, the often dangerous and potentially stressful nature of being a service member may lead soldiers to drink more than their civilian counterparts (13, 14).

There are a number of avenues along which a soldier with an alcohol problem might be referred to the Army's ASAP program for evaluation. Certainly the growing emphasis on detection and treatment of substance abuse in the military and civilian sectors has influenced the normative environment in which drinking occurs as well as vigilance and motivation to intervene when a problem is detected. Commanders are instructed to identify substance abuse problems within their unit as a part of troop health and readiness. Therefore, it is not surprising that Commanders would be vigilant in observing any suspicious or unhealthy behavior, especially among newer and younger troops. Additionally, some soldiers may engage in certain activities that would increase their chances for abuse detection. The relationship between alcohol and injury, for example, has been well-documented (9, 10, 25, 44). Soldiers who engage in more injury-causing activity are likely to have more healthcare visits and therefore more opportunities to have an alcohol problem medically-detected. Also, soldiers who drive more frequently than others have more opportunities for driving under the influence and may be at greater risk of having a DUI-related referral to ASAP.

We found significant associations between individual demographic characteristics and source of referral. Soldiers under 21 were nearly 50% less likely to be identified through a DUI than older soldiers. Since these younger soldiers comprise a large proportion of the population referred to ASAP overall, this perhaps implies low levels of underage drinking and driving in the U.S. Army. But it may also be a function of under-reporting. By 1988, every state – and therefore military installation – had raised their minimum legal drinking age to 21 implying that any soldier under 21 years old caught drinking and driving would be charged with both a DUI and underage drinking. To avoid having to give these young men a double conviction, it is possible that they were released with only a warning. Other subpopulations - for example Hispanics and no-longer-married soldiers - however, had greater odds of referral through DUI charges. They appear to be good target populations for drinking and driving prevention initiatives. Our finding that soldiers with at least a college degree were significantly more likely than others to be referred after a DUI were based on unadjusted estimates. The association of age with college education may play a large role in explaining this finding.

We found that women were nearly twice as likely to be referred by a physician as were men. These findings appear to contradict research by *D'Amico et al.* (2005) that alcohol-related problems in men are more likely to be detected among general medical providers (23). However, our findings are compatible with research that claims women are more likely to seek help for alcohol problems through primary care physicians (8).

Our findings also support research on civilian populations by *Yu et al.* (2004) suggesting that Hispanics were more likely than other ethnic groups to be medically referred (52). This may be due to the fact that Hispanics visit physicians more frequently or that physicians may look for signs of alcohol abuse more within this population or that

they are more forthcoming with medical care providers regarding their alcohol-related problems.

Our research contradicts Boscarino's findings regarding race and self-referral patterns. He found that blacks were more likely than other racial/ethnic groups to self-refer (12) while our data suggest greater odds of self-referral to ASAP among whites compared to blacks. Variations in education, employment and insurance between races are less pronounced in the military than they are in civilian populations, offering a potential explanation for these health-seeking differences between civilian and Army populations.

The demographic characteristics of soldiers ultimately enrolled in the Army alcohol treatment program differ from those initially referred for evaluation of alcohol problems. Although this may reflect underlying differences in alcohol problems it might also be a function of the way the ASAP program works. For example, soldiers over the age of 35 have a relatively high probability of being enrolled in the ASAP program compared with the other heavy drinking age group – 21 to 25 year olds. This may be the result of the Army's practice of only enrolling soldiers with a high likelihood of successfully completing treatment and returning fully functioning to the Army. It is also possible that a Commander will only enroll soldiers who have already proven their ability to contribute to the Army and in whom the Army has already invested substantial training resources.

Nearly 43% of those evaluated for alcohol problems are ultimately not enrolled for treatment. For women, a high proportion of those not enrolled were referred for services other than alcohol or drug related treatment. This may reflect a failure to detect mental health and social problems and a misdiagnosis of these problems as substance abuse disorders. Or it may be an indicator that women experiencing significant psychological trauma self-medicate with alcohol.

Soldiers younger than 21 who were not enrolled were mostly referred to prevention training. Perhaps ASAP evaluators see alcohol-related encounters in young soldiers as episodic rather than a marker for a more serious problem. Similarly, soldiers with no greater than a high school qualification were more likely to be referred to prevention training than non-enrolled soldiers with higher educational levels. Since our analyses were not adjusted, this may be due to the fact that younger soldiers typically have lower levels of education than older soldiers.

Non-enrolled higher-ranking officers were over ten times as likely to be referred to services other than for substance abuse. This dramatic difference might reflect a reluctance to label a high-ranking officer with an alcohol problem due to their status or out of concern for the possibly more significant consequences. An Officer with a substance abuse problem might be more likely to be discharged than lower ranking soldiers with a problem.

The assessment of source of referral and enrollment decision may help identify means of referral that are most successful in detecting soldiers with alcohol abuse problems in need of treatment. Not surprisingly, self-referred soldiers were nearly three times as likely as those referred by others to be enrolled for treatment in ASAP. Soldiers initially referred by family members were significantly less likely than soldiers referred by other mechanisms to enroll in ASAP. Instead, they were usually referred to other services. It may be that the problems identified by family members, warranted family, marital or individual psychological counseling. It might also be that those who self-refer have more serious alcohol-related diseases than those referred via other mechanisms. In addition, the association between self-referral and recidivism might also suggest that soldiers referred through these mechanisms are sicker.

Of the soldiers referred medically or by a physician, only 51% were enrolled in treatment programs - this was significantly less than other referral sources. Thirty percent of the medically-referred and not enrolled were deemed by the ASAP evaluation counselor not to have an alcohol problem. This discrepancy between the judgment of the doctor and that of the ASAP counselor deserves to be explored further. Civilian studies have identified problems with physician-detection of alcohol abuse (24, 46).

Forty four percent of soldiers initially referred for evaluation after a DUI were not enrolled in alcohol treatment. The majority of them (86%) were referred to a prevention training short course. This, however, may be inappropriate. A pilot study of a DUI program at Fort Bliss in El Paso, Texas in 1984 found that 88% of soldiers apprehended for a DUI met criteria for either alcohol dependence or alcohol abuse (35). If this finding is generalizable to the entire Army population, it raises questions about the adequacy of screening and intervention for soldiers referred for evaluation after a DUI. A short course in the prevention of alcohol abuse may not be sufficient treatment.

Patterns of recidivism could be useful to indicate of success of treatment and the accuracy of enrollment decisions and/or referral sources, but this interpretation is complicated by lack of information on severity. We found that soldiers who received more follow-up care at their first enrollment were more likely to re-enroll at a later date. This may imply that the soldier did not receive adequate care during their first enrollment in ASAP. The number of follow-up visits may a proxy for severity of the alcohol-related problem and those with more severe problems are less likely to make a successful recovery and more likely to experience a repeat event. Moreover, soldiers followed more closely after an enrollment may be more likely to have problems detected again.

Random biochemical testing does not generally identify many alcohol abuse cases, and those few it does detect are probably not the most severe judging from the recidivism rate. The cost-effectiveness of this screening strategy may need to be reassessed.

While referral through legal investigation was not found to be significantly associated with future enrollments, soldiers enrolled after a DUI charge at their first ASAP encounter were less likely to re-enroll than soldiers originally enrolled by other

referral mechanisms. This finding may suggest that legal intervention has a positive impact on curbing adverse behaviors such as alcohol abuse, supporting research by *Atkinson et al.* (2003) that found legal intervention to be an indicator of successful treatment completion (7). However, the decreased likelihood of re-enrollment by these soldiers may be a function of dismissal from the Army. It may also simply be an artifact of the covariance between level of disease severity and mechanism for referral. That is, young male soldiers (the group at highest risk for DUI) may engage in drinking and driving behaviors as part of a constellation of high risk activities which, though dangerous, may not necessarily be indicative of alcohol dependence or an alcohol-related disorder. Thus, they may be more easily “treated” and/or may be more likely to age out of the behaviors than soldiers with alcohol dependence, which would also make them lower risk for recidivism.

Soldiers who self refer for an alcohol evaluation were more likely to re-enroll at a later date. This was true of both soldiers who self-referred and received treatment (were enrolled) and soldiers who self-referred but were not enrolled. Both groups had significantly higher rates of repeat evaluations and enrollments. The soldiers who self-referred but were not enrolled believed that they had a substance abuse problem. They were turned away from treatment services through the ASAP, though they still remained in the Army long enough to be evaluated again. Their recidivism rates imply that soldiers who admit to alleged substance abuse problems should perhaps be treated more frequently and aggressively. Self-referral may also be a marker for more advanced disease progression and/or disruption of social supports that might lead to help-seeking behaviors.

Soldiers who were referred by a Commander for an initial evaluation but who were not enrolled were less likely to enroll in the future. Since we cannot account for dismissal from the service – whether honorable or dishonorable – we cannot rule out the possibility that these soldiers simply did not remain in service. On the other hand, soldiers who were initially referred by their Commanders and *enrolled* at that first evaluation had greater odds of recidivism. This could speak to the fact that the Army believed these soldiers were worth retaining (since they were enrolled in the first place) to the point that they would enroll them again. Or it might reflect disease severity. It is possible that Commanders are more likely to notice more severe cases of alcohol abuse, to refer the soldier and to approve treatment. If a soldier’s alcohol problem is interfering with their work and service duties, it is probably significant enough to warrant both Commander attention and treatment; in these circumstances continued treatment as measured by multiple enrollments in ASAP. Soldiers referred by a commander and enrolled for treatment may be sicker than other soldiers and thus at greater risk for relapse.

Soldiers who were not enrolled but instead sent to ADAPT for prevention training were more likely than enrolled soldiers to experience a second alcohol-related event and be enrolled in the future. This raises questions about the effectiveness of the prevention training program and/or of the initial screening. It appears that either these soldiers should have been enrolled in ASAP in the first place or that ADAPT training needs to be

improved. It may be, however, that some soldiers who attend ADAPT training and have no further troubles with alcohol may simply age out of the behaviors and perhaps would have done so with or without the training. This is further supported by our finding that soldiers under 21 were more likely to be sent to ADAPT prevention training in lieu of enrollment. Further research, controlling for these potential threats to validity, are needed to better evaluate the effectiveness of ADAPT.

Soldiers not enrolled because of Commander intercession were less likely to return to ASAP for evaluation. This may be because these soldiers changed their drinking habits. Perhaps Commanders perceived these soldiers to be a poor risk, unlikely to recover and contribute to the military effectively, and they were discharged. Since our study does not adjust for time in service, we cannot know if these soldiers remained in the army without a subsequent drinking incident, or, in fact, they were discharged from the army. More research is needed to better characterize the longer range outcomes of those not enrolled in the treatment program.

Strengths and Limitations

This is a descriptive study using existing, secondary data sources and as such there are some important data limitations. It has not been possible, for example, to make adjustments to account for soldiers who are discharged from the Army or who may have died while on active duty. As a result we are unable to discern whether a lack of subsequent enrollment implies recovery, death or discharge. In addition, because data are cross-sectional, it is not possible to assert any causal relationship between variables that can change, such as marital status and alcohol problems.

The demographic breakdown of the Army is quite different from that of the general U.S. population with the Army predominantly male, younger and with a greater representation of minorities than the civilian population. Moreover, our population is unique in that all its members are employed and have access to health care through Army-sponsored health insurance. The unique demographic make-up of the Army may limit the applicability of this study's results to the general civilian population, as well as explaining why the army results have sometimes differed from findings in the wider population.

A major strength of this study is the large sample size from which our conclusions were drawn. Most studies that have examined the characteristics of individuals referred and/or enrolled in civilian alcohol treatment programs have been limited in size and therefore power. Additionally, the many components of the TAIHOD provide an opportunity to link soldiers' demographic and health-related data at the level of the individual. This study provides the first overview of the demographic characteristics of this large population of alcohol referees and enrollees.

Conclusions and Recommendations

- Our findings illustrate the strengths of the current Army Substance Abuse Program and reveal areas for improvement.
- These results suggest that, overall, the demographic profile of those being referred to ASAP and treated for alcohol problems matches those of high risk alcohol abusers found in other studies.
- Soldiers who were single, young, male, of lower rank, of lower education, in the infantry and not black were all more likely to be referred for alcohol abuse evaluations. Commanders and physicians should be aware of these characteristics when they identify soldiers to be evaluated for substance abuse, but also keep in mind that alcohol abuse crosses all demographic boundaries.
- The three most common ways a soldier is referred to ASAP for an alcohol evaluation (accounting for 70% of all referrals) were Commander or supervisor recommendation, legal investigation or apprehension and self-referral.
- Different referral processes seem to reach or target different demographic subgroups of the population. Male soldiers were much more likely than female soldiers to have been referred for evaluation as a result of an investigation, and were also more likely to be referred as a result of drinking under the influence. Female soldiers were more likely to have self-referred, to have a medical referral or be referred by family. It may be useful to social services on posts to consider whether their alcohol screening and detection programs may be missing certain demographic subgroups. This information should also be applied to increase both the sensitivity and specificity of screening techniques.
- Marital status may modify the association between race and alcohol enrollment and gender and alcohol enrollment. More research is needed to evaluate these potential interactions.
- Hispanics and no-longer-married soldiers were both more likely than others to be referred to ASAP for evaluation following a DUI charge. This finding indicates the need for more research into the etiology of this association and possibly the need for targeted prevention efforts.
- Only soldiers who are considered retainable and who have demonstrated good potential to return to duty and contribute to the service were enrolled. These are usually soldiers in whom the military had already invested resources but who are not too close to retirement. For example, while soldiers under age 30 were more likely to be referred for evaluation, soldiers over 30 were more likely to be enrolled in ASAP.

- Approximately two-thirds of non-enrolled soldiers were instead referred to ADAPT for prevention training education. Evaluators found 19 percent of non-enrolled did not have a substance abuse problem. Nine percent were not enrolled because their Commander decided against enrollment.
- Soldiers referred either medically or through an investigation were less likely than soldiers referred through other mechanisms to be enrolled in ASAP. Soldiers who were enrolled following a DUI were less likely to have a subsequent enrollment. Usually this was because these soldiers were either found not to have an alcohol-related problem or the problem was considered minor enough that referral to the short ADAPT prevention training education short course was sufficient. Some of these soldiers may have been discharged from the Army.
- Soldiers referred to ADAPT in lieu of enrollment in ASAP were more likely to have a second incident resulting in enrollment in ASAP for drug or alcohol abuse. This raises questions both about the effectiveness of ADAPT as a prevention program and about the accuracy of enrollment decisions of the Commander and/or ASAP counselor at a soldier's first evaluation. The current ADAPT curriculum might need to be revised or implemented more aggressively, or the screening process for deciding on enrollment in a more formal treatment reviewed.
- Self-referred soldiers who were not enrolled at their first evaluation were more likely than soldiers referred by other mechanisms to be enrolled at a later date following a subsequent evaluation. It is possible that self-proclaimed alcohol abusers are not receiving proper attention or treatment after their first evaluation. Treating these individuals sooner may expedite rehabilitation and a more productive return to duty.
- Further research is needed to more fully explore and evaluate the health, behavioral and occupational outcomes of soldiers referred to and enrolled in Army Substance Abuse Program. The analytic approach elected to conduct such a study will need to include a means of measuring and controlling for dismissal from the army during the follow up period.

References

1. Alcohol-attributable deaths and years of potential life lost--United States, 2001. *MMWR Morb Mortal Wkly Rep* 53: 866-870, 2004.
2. Army Substance Abuse Program (ASAP). In: AR 600-85, Revised 2001.
3. SAS help file (Version 8.2 ed.). Cary, NC: SAS Institute, Inc., 2001.
4. Amoroso PJ, Swartz WG, Hoin FA, and Yore MM. Total Army Injury and Health Outcomes Database: description and capabilities. Technical Note 97-2, ADA322980. Natick, MA: U.S. Army Research Institute of Environmental Medicine, 1997.
5. Amoroso PJ, Yore MM, Weyandt B, and Jones BH. Chapter 8. Total Army injury and health outcomes database: a model comprehensive research database. *Mil Med* 164: 1-36, 1999.
6. Army Demographics Unit and Office of the Deputy Chief of Staff for Personnel. Army Profile FY98. 1998.
7. Atkinson RM, Misra S, Ryan SC, and Turner JA. Referral paths, patient profiles and treatment adherence of older alcoholic men. *J Subst Abuse Treat* 25: 29-35, 2003.
8. Becker KL and Walton-Moss B. Detecting and addressing alcohol abuse in women. *Nurse Pract* 26: 13-16, 19-23; quiz 24-15, 2001.
9. Bell NS, Amoroso PJ, Yore MM, Senier L, Williams JO, Smith GS, and Theriault A. Alcohol and other risk factors for drowning among male active duty U.S. army soldiers. *Aviat Space Environ Med* 72: 1086-1095, 2001.
10. Bell NS, Amoroso PJ, Yore MM, Smith GS, and Jones BH. Self-reported risk-taking behaviors and hospitalization for motor vehicle injury among active duty army personnel. *Am J Prev Med* 18: 85-95, 2000.
11. Bell NS, Harford T, McCarroll JE, and Senier L. Drinking and spouse abuse among U.S. Army soldiers. *Alcohol Clin Exp Res* 28: 1890-1897, 2004.
12. Boscarino J. A national survey of Alcoholism Treatment Centers in the United States--a preliminary report. *Am J Drug Alcohol Abuse* 7: 403-411, 1980.
13. Bray RM, Fairbank JA, and Marsden ME. Stress and substance use among military women and men. *Am J Drug Alcohol Abuse* 25: 239-256, 1999.
14. Bray RM, Hourani LL, Rae KL, Dever JA, Brown JM, Vincus AA, Pemberton MR, Marsden ME, Faulkner DL, and Vandermaas-Peeler R. 2002 Department of Defense

Survey of Health Related Behaviors Among Military Personnel. Research Triangle Park, North Carolina: Research Triangle Institute, 2003.

15. Caetano R and Clark CL. Trends in alcohol-related problems among whites, blacks, and Hispanics: 1984-1995. *Alcohol Clin Exp Res* 22: 534-538, 1998.

16. Caetano R and Clark CL. Trends in alcohol consumption patterns among whites, blacks and Hispanics: 1984 and 1995 [In Process Citation]. *J Stud Alcohol* 59: 659-668, 1998.

17. Caetano R, Cunradi CB, Clark CL, and Schafer J. Intimate partner violence and drinking patterns among white, black, and Hispanic couples in the U.S. *J Subst Abuse* 11: 123-138, 2000.

18. Centers for Disease Control and Prevention. Epi Info(TM). Database and statistics software for public health professionals. Version 3.3.2., 2005.

19. Cherpitel CJ. Alcohol in fatal and nonfatal injuries: a comparison of coroner and emergency room data from the same county. *Alcohol Clin Exp Res* 20: 338-342, 1996.

20. Cherpitel CJ, Ye Y, and Bond J. Attributable risk of injury associated with alcohol use: cross-national data from the emergency room collaborative alcohol analysis project. *Am J Public Health* 95: 266-272, 2005.

21. Crawford MJ, Patton R, Touquet R, Drummond C, Byford S, Barrett B, Reece B, Brown A, and Henry JA. Screening and referral for brief intervention of alcohol-misusing patients in an emergency department: a pragmatic randomised controlled trial. *Lancet* 364: 1334-1339, 2004.

22. D'Amico EJ, Ellickson PL, Wagner EF, Turrise R, Fromme K, Ghosh-Dastidar B, Longshore DL, McCaffrey DF, Montgomery MJ, Schonlau M, and Wright D. Developmental considerations for substance use interventions from middle school through college. *Alcohol Clin Exp Res* 29: 474-483, 2005.

23. D'Amico EJ, Paddock SM, Burnam A, and Kung FY. Identification of and guidance for problem drinking by general medical providers: results from a national survey. *Med Care* 43: 229-236, 2005.

24. Daeppen JB. Screening and brief alcohol interventions in trauma centers. *Swiss Med Wkly* 133: 495-500, 2003.

25. Dawson DA. Heavy drinking and the risk of occupational injury. *Accid Anal Prev* 26: 655-665, 1994.

26. Fertig JB and Allen JP. Health behavior correlates of hazardous drinking by Army personnel. *Mil Med* 161: 352-355, 1996.

27. Gomberg ES. Older women and alcohol. Use and abuse. *Recent Dev Alcohol* 12: 61-79, 1995.
28. Harford TC, Hanna EZ, and Faden VB. The long- and short-term effects of marriage on drinking. *J Subst Abuse* 6: 209-217, 1994.
29. Harvey LR. A review of the first year's experience in the U.S. Army Alcohol and Drug Abuse Program. *Am J Public Health* 64: 999-1001, 1974.
30. Hingson R and Howland J. Alcohol and non-traffic unintended injuries. *Addiction* 88: 877-883, 1993.
31. Hingson R and Howland J. Alcohol as a risk factor for injury or death resulting from accidental falls: a review of the literature. *J Stud Alcohol* 48: 212-219, 1987.
32. Hoge CW, Toboni HE, Messer SC, Bell N, Amoroso P, and Orman DT. The occupational burden of mental disorders in the U.S. military: psychiatric hospitalizations, involuntary separations, and disability. *Am J Psychiatry* 162: 585-591, 2005.
33. Howland J and Hingson R. Alcohol as a risk factor for drownings: a review of the literature (1950-1985). *Accid Anal Prev* 20: 19-25, 1988.
34. Howland J, Mangione T, Hingson R, Smith G, and Bell N. Alcohol as a risk factor for drowning and other aquatic injuries. In: *Drug and Alcohol Abuse Reviews, Vol. 7: Alcohol, Cocaine, and Accidents*, edited by Watson RR. Totowa, NJ: Humana Press Inc., 1995, p. 85-104.
35. Kruzich DJ, Silsby HD, Gold JD, and Hawkins MR. An evaluation and education program for driving while intoxicated offenders. *J Subst Abuse Treat* 3: 263-270, 1986.
36. Longobardi PG. An organizational development intervention in an Army Community Drug and Alcohol Assistance Center. *Mil Med* 145: 30-33, 1980.
37. Mudar P, Kearns JN, and Leonard KE. The transition to marriage and changes in alcohol involvement among black couples and white couples. *J Stud Alcohol* 63: 568-576, 2002.
38. National Institute on Alcohol Abuse and Alcoholism. Are women more vulnerable to alcohol's effects? *Alcohol Alert* 46: 1-6, 1999.
39. Power C, Rodgers B, and Hope S. Heavy alcohol consumption and marital status: disentangling the relationship in a national study of young adults. *Addiction* 94: 1477-1487, 1999.

40. Richards M, Hardy R, and Wadsworth M. The effects of divorce and separation on mental health in a national UK birth cohort. *Psychol Med* 27: 1121-1128, 1997.
41. Rochat S, Wietlisbach V, Burnand B, Landry U, and Yersin B. Success of referral for alcohol dependent patients from a general hospital: predictive value of patient and process characteristics. *Subst Abus* 25: 9-15, 2004.
42. Ruben HL. Rehabilitation of drug and alcohol abusers in the U.S. Army. *Int J Addict* 9: 41-55, 1974.
43. Senior L, Bell NS, Yore MM, and Amoroso PJ. Hospitalizations for fall-related injuries among active-duty Army soldiers, 1980-1998. *Work* 18: 161-170, 2002.
44. Smith GS, Branas CC, and Miller TR. Fatal nontraffic injuries involving alcohol: A metaanalysis. *Ann Emerg Med* 33: 659-668, 1999.
45. Smith GS, Dannenberg AL, and Amoroso PJ. Hospitalization due to injuries in the military. Evaluation of current data and recommendations on their use for injury prevention. *Am J Prev Med* 18: 41-53, 2000.
46. Smothers BA, Yahr HT, and Ruhl CE. Detection of alcohol use disorders in general hospital admissions in the United States. *Arch Intern Med* 164: 749-756, 2004.
47. Stagliano RF, Richards JD, Kuehr W, and Deal CE. Operation Desert Shield/Storm performance of soldiers enrolled in the alcohol and drug abuse prevention and control program. *Mil Med* 160: 631-635, 1995.
48. Weisner C and Matzger H. A prospective study of the factors influencing entry to alcohol and drug treatment. *J Behav Health Serv Res* 29: 126-137, 2002.
49. Weisner C, Matzger H, Tam T, and Schmidt L. Who goes to alcohol and drug treatment? Understanding utilization within the context of insurance. *J Stud Alcohol* 63: 673-682, 2002.
50. Williams JO, Bell NS, and Amoroso PJ. Drinking and other risk taking behaviors of enlisted male soldiers in the US Army. *Work* 18: 141-150, 2002.
51. Yore MM, Bell NS, Senior L, and Amoroso PJ. Progress toward attainment of the Healthy People 2000 objectives in the U.S. Army: measured by health risk appraisal results. *Am J Prev Med* 19: 87-93, 2000.
52. Yu LM and Templer DI. Personality, psychopathology, and demographic correlates of medical vs behavioral reasons for referral in alcoholic men. *Psychol Rep* 94: 273-276, 2004.